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The Architectural History of Cambridge.

THE most cold-blooded critic,—and we give thanks that we are, in De Quincey's phrase, "no such cattle," — could hardly refrain from enthusiasm in touching on a subject of such interest as this, or on a work so worthy of the subject* as that which the genius and energy of Professor Willis projected and partially carried out, and which the long and conscientious labour of his legatee, Mr. Clark, has elaborated into the splendid book now before the public. It is true that, with the exception of the great Chapel of King's College, "the Parthenon of Tudor architecture," as it has been not inaptly called, the buildings to be dealt with do not represent the greatest or most important class of architectural work; nor in their disposition is there any such striking *coup d'œil* as that realised in the sister university, in—

"The stream-like windings of that glorious street"

which Wordsworth has immortalised. The most striking architectural effect in the town, perhaps, is on King's-parade, with the picturesque gate of King's in the foreground, the chapel towering on the right, and the wide sweep of lawn surrounded by the level lines of the quadrangle buildings. Generally speaking, however, the architectural beauty of Cambridge has something of a shy and reticent type. The streets are narrow; the colleges stand apart, each in its own *temenos*; they surprise you with a sudden picture, the more charming because unexpected, on turning the corner of some narrow lane; they gleam pleasantly among their trees as seen from "the backs" on the further bank of "Camus, reverend sire,"—reverend, alas! more by association than in aspect. Cambridge architecture, with the exception, again, of King's Chapel (which is never long out of one's mind in thinking of Cambridge) is not aspiring in character. We might cite as another exception, perhaps, the modern chapel of St. John's, externally not one of the happiest of its architect's works, though the lofty narthex or ante-chapel is a fine bit of interior effect. In general, however, the element of horizontality prevails, the more emphasised by the general flatness of the ground and the constant recurrence of the beautifully-kept level lawns to which the college buildings form the background or the enclosure. Indeed, the quiet sober lines of the architecture seem peculiarly to harmonise with the effect of these level expanses of green; the two constituents of the architectural picture seem as if designed specially for each other. Everywhere it is the architecture of repose; but of a repose dignified, marked with a faded but stately grace of its own, the more emphasised, to the occasional visitor, by contrast with the approach to it; for surely never had a great university town a more uninteresting and unpromising road of access than that into Cambridge from the railway.

Architecturally, then, the aspect of old Cambridge is singularly reposeful and devoid of all fussiness, pretence, and vulgarity (we can hardly say the same for all the new additions); it seems emphatically the architectural expression of study and culture, removed from the turmoil of this hurrying century. This peculiar charm can be felt and appreciated, doubtless, by many; not to feel it, indeed, would argue a mind duller than the fat weed by Lethe's wharf. But there is the further and deeply interesting historical side to the picture. By what steps did this assemblage of buildings dedicated to learning arise and get moulded into its present shape? That is the question which the eager mind of Willis set itself to investigate, and the answer to which is formulated in this fine and (to use once more a rather hard-worked epithet) monumental publication.

The first beginning of Willis's task was in the form of a lecture "On the Collegiate and other Buildings in Cambridge," delivered in the Senate House on July 5, 1854, on the occasion of the visit of the Archæological Institute to Cambridge,—a lecture which, though nearly unnoticed by the press, excited the greatest enthusiasm among those who heard it, and which he was earnestly requested to publish; but soon found he could do no justice to the subject in a pamphlet, and announced his intention of developing it into a detailed history. But in this extended labour he made but slow progress; and Mr. Clark thinks that, not having intended publication in the first instance, the labour of going over and verifying the materials again proved very irksome to him. "He accomplished this task, however, for several colleges, at least up to a certain point, as for instance for Trinity College, where he was evidently fascinated by the interesting problem which the original arrangement of the site presented, and where the presence of his friend Dr. Whewell no doubt stimulated him to special activity. The extent of his research there is shown by the enormous mass of material which he had collected, and by the numerous plans of the site which he had made and rejected, but which he evidently thought worth preserving for future reference. At King's College also, where the site is of nearly equal interest, he had made similar collections."

In 1860, on the occasion of the meeting of the Architectural Congress at Cambridge, he gave a second lecture on "The Architectural History of the University," and told his audience that he proposed to bring out a book on the subject very shortly; and in the following year, as Rede Lecturer, he dealt more in detail with a portion of the subject,—"The Architectural History of Trinity College." Yet still the materials kept increasing, and his fastidious care delayed publication, besides his continual preparation of important papers for the yearly meetings of the Archæological Institute; and, subsequently, the illness and death of Mrs. Willis gave a shock to his system from which he never sufficiently recovered to resume any serious literary work. He told Mr. Clark that he had bequeathed the manuscript and all the materials to him, but was still unwilling to part with them during his own lifetime. When Mr. Clark eventually came to examine this important bequest, he found that though the manuscript was arranged and grouped in the most orderly manner, the work on no one college was complete; if the history of the building was complete, that of the site would be unfinished, or *vice versâ*; and eventually Mr. Clark came to the conclusion that to make the most of the materials collected, and to complete them satisfactorily, it would be necessary for him to go over again the whole track of evidence from the beginning, as well as furnishing the portions not yet undertaken. This task has occupied him eleven years; but the result is a work of permanent value.

The colleges are taken in the order of the date of their foundation, commencing with Peterhouse, founded by Bishop Hugh de Balsham, who in 1284 removed his scholars from the Hospital of St. John, and placed them in two hostels by the Church of St. Peter outside Trumpington Gates,—an act which was confirmed by a charter of Edward I. in the following year. But before enlarging on the histories of the separate colleges, we have a chapter on the early history of Cambridge, or Grantebridge, as it was originally called, the bridge over the Grenta or Grant, the river being referred to as late as 1702, in an Act of Parliament, as the "river *Cham*, alias *Grant*." The author suggests that "Camboritum," the name of a Roman station which may with probability be identified with

* The Architectural History of the University of Cambridge and of the Colleges of Cambridge and Eton. By the late Robert Willis, M.A., F.R.S., Jacksonian Professor in the University of Cambridge. Edited, with large additions, and brought up to the present time, by John Willis Clark, M.A., late Fellow of Trinity College, Cambridge. University Press, Cambridge. 1886.

the site on the right bank of the river near the ancient bridge, meant "the ford at the bend," and that the name of the site was eventually and by degrees transferred to the river. The author gives some of the stages of the transformation, Camden (1586) mentioning both names as in use; Speed's map of Cambridgeshire (1610), giving Cam; Drayton's "Polyolbion" mentioning both Cam and Grant, but the word "Grant" alone appearing on the map; and Loggan's map of the town (1688) giving the title "the river Cam" at full length. It takes us back curiously to the practical origin of names, that both our great universities derive their names from the means of getting across a river. In the fourth volume, devoted entirely to maps and plans, the plan of Cambridge before the colleges is given as far as can be ascertained or conjectured from ancient maps and existing names and landmarks; and in this case, as well as in some of the plans of the colleges, the plan of Cambridge as existing is printed as a fly-leaf on tracing cloth, so that it can be placed over the ancient plan, and the changes and similarities compared: an excellent arrangement. The main lines of thoroughfare have persisted in their course since the site of Jesus College and close was that of the nunnery of St. Rhadegund, since the Augustinian monks occupied the site on which now stands the Natural History Museum, and the Dominicans held, apparently within exactly the same boundaries, the enclosure which is now occupied by Emmanuel College and its grounds. The colleges are almost entirely within the extent of the old town; the new town, the "secular" portion of it, if we may so distinguish it, having spread and developed almost entirely to the eastward, away from the river and the colleges. Indeed, the latter, with their grounds, have for a long period formed an unbroken chain along a considerable portion of the river bank, stopping the progress of secular building in that direction; the grounds of Queen's, King's, Clare, Trinity, and St. John's extending also to the western bank of the river, over that succession of stone bridges which form such a picturesque element of this portion of the scene. The old plans actually existing, however, do not apparently go back further than the latter part of the sixteenth century; at least, Willis gives that drawn by Lyne for Dr. Caius's history of the university in 1574, as the oldest. This, in reality, is a bird's-eye view, and Willis adds some remarks, the point of which will be evident to all who have compared old engravings of still existing buildings with the reality, on the curiously conventional and often utterly untruthful manner in which buildings are represented in such views at that date. Mr. Clark, however, —for we presume the remarks interpolated in brackets are his,—thinks this map a valuable record as to the relative positions and the names of streets and places, though it cannot be trusted for the verisimilitude of the building. The earliest measured plan is that of John Hammond (1592), now mounted and framed in the Selden Library. In this measured plan, however, the buildings are shown in bird's-eye perspective, and these small perspective views of many of the colleges are reproduced as a portion of the illustrations of the college histories.

Of the other authorities used in the work Mr. Clark has a good deal to say, on which we can only touch briefly. For the history of the site the best authorities are the royal letters patent authorising the foundation, and the conveyances of further additions of land, usually preserved in the muniment-room of the college; and these give often very minutely the boundaries of the land conveyed, and points of the compass, but no measurements, though in many cases the dimensions can be pretty well made out by comparison with the existing landmarks and street lines. The authorities for the history of the buildings are the accounts for work done (some of which are printed as appendices), and the collection of manuscripts of Baker and Cole, members of the University in the seventeenth and eighteenth centuries respectively. The former had been a member of the University for sixty-six years, and his memoranda, partly among the Harleian MSS. in the British Museum and partly in the University Library, fill forty-two folio volumes; but he had no special interest in architecture. Cole, on the contrary, was a man of architectural tastes, and his MS. collection, bequeathed (ninety-folios!) to the British Museum, is described by Mr. Clark as "an invaluable storehouse of information about the town, county, university, and colleges of Cambridge."

A great portion of the third volume of the work before us is occupied by a lengthened essay, or series of essays, on the component parts of a college, tracing the manner in which these grew up into separate and necessary requirements. We should rather have expected this portion to have formed the introduction to the history of particular colleges; but Mr. Clark seems to think the history and theory of the college institution generally would be better appreciated after the reader had gone through the detailed facts connected with the actual colleges. The great and most obvious distinction between a college and a monastery, in regard to plan and arrangement, is the separate habitation for each member, in place of the day-room or fratry and the common dormitory. But apart from this, the object of the author is to show that, whatever resemblance may be imagined between the general idea of a college and a monastery, and in spite of the fact that the oldest colleges date back to monastic periods and even occupy the actual sites of monastic establishments, there is, in fact, no connexion between the two; and that the features which may be supposed to favour this idea (such as the chapel, taking the place of the Mediæval church which was an essential part of the monastery), in reality grew up very gradually and were developed, little by little, as practical requirements seemed to point to the necessity for them. The buildings at first supposed to be required for a college were little more than lodgings, a refectory, and a kitchen. The devotions of the students were performed in the parish church. "The attempt to build a quadrangle on a settled plan, containing the chambers and official buildings dispersed in order round about the area, in which form all these early colleges now present themselves, was not made till long after their establishment. For, in fact, until the collegiate system had fairly stood the test of a long trial, it was hardly possible to determine what arrangement of buildings would be best adapted for its practical working, while the continual growth and improvement of the system in each successive foundation demanded enlargements and changes." In modern times, overcrowding of the colleges has in some cases brought round a recurrence to an "accidental" system of housing, and members of colleges have had to live out of the colleges to which they were attached *, thus preserving a kind of practical

The Gate of Honour, Caius College (Restored).

* A good many years ago (whether it be so now we know not, for University slang fluctuateth) an undergraduate at Cambridge who lived in lodgings out of his college was termed a "beast," *i.e.*, we presume, not strictly speaking a college "man."

reminiscence of the fact that a college consists not in the material buildings and their arrangement so much as in the spiritual and intellectual fellowship of students under a recognised system and authority. The earliest college at Cambridge, Peterhouse, as already noted, was commenced merely by settling the scholars in a couple of "hostels"; and Bishop de Balsham's additional bequest to them at his death (the scholars being then fifteen in number) of three hundred marks for erecting new buildings, only enabled them to build a refectory and enlarge their site. Eventually they completed their quadrangle; and here it may be observed how inherent in the human mind is the tendency to build in quadrangles. It is not a sanitary method of building—at all events, unless the proportion of height of building to enclosed area is very small; but (like a good many other insanitary proceedings) it is very pleasing to the æsthetic perceptions. Willis notes as the first quadrangle college plan carried out, of malice prepense, in that form, William of Wykeham's New College at Oxford, and his remarks anent the chapel are worth quoting:—

"The most original feature of the arrangements is that the chapel and hall form a continuous range of building on the north side, the altar of the former being placed against the partition wall which has the high table of the latter on its other side. The chapel, therefore, has no east window, but in lieu thereof a lofty pile of tabernacle work and imagery covers the whole surface of the east wall. The ante-chapel occupies two bays of the seven into which the length of the whole chapel is divided, but it has the novel peculiarity of projecting considerably north and south in the manner of transepts, so that the whole plan looks like a cross church lacking the nave. Hence many have imagined that this plan was imitated from the chapel of Merton College, not remembering that the transepts of the latter were erected forty years after Wykeham's, and that the remains of these western arches, now filled with masonry, show that a nave with arches formed part of the original design; this building being heretofore, as now, both a collegiate chapel and a parochial church. No nave, however, was intended at New College, and the statutes furnish a clue to the motive of the large ante-chapel, by enjoining that disputations in civil law, canon law, and theology are to take place therein. The transverse position of the ante-chapel is an ingenious device to obtain space for it without intruding on the portion of the site intended for the cloister cemetery."

Thus the narthex of the modern St. John's Chapel at Cambridge appears to be a return (whether intentionally or not) to the form of ante-chapel which was made a precedent by Wykeham, though without either the practical or constitutional reasons which governed the plan of the former.

We have just referred to the unsanitary effect or defect of the quadrangle plan when completely carried out. In the chapter following that from which the last quotation was made, Willis introduces a very interesting practical testimony on this head from the directions of Dr. Caius (1565) in regard to the court which he built on the south side of Gonville Hall to receive the students of his new foundation. This court was built on the new principle of having only two parallel ranges of buildings on the east and west sides, the chapel and part of the master's lodge of Gonville Hall forming the north side, the quadrangle being bounded on the south side only by a low wall, having in the centre the detached gateway called the "Gate of Honour,"—that most interesting and picturesque but now much-crumbled structure, of which the accompanying restoration is given in the chapter on Caius College, and reproduced here by the kind permission of the publishers. And this is what Dr. Caius left on record on the subject of his quadrangle plan:—

"We decree that no building be constructed which shall shut in the entire south side of the College of our foundation, lest for lack of free ventilation the air should become foul, the health of our College, and still more the health of Gonville's College, should become impaired, and disease and death be thereby rendered more frequent in both."

Dr. Caius, it would seem, was not only in advance of his own day, but in advance of ours, in his notions of sanitary planning. What would he have said to the quadrangles of the new War Offices as proposed?

The "Combination-room" Willis seems to admit to be more like a direct descendant from the monastery plan than any other part of the typical college plan. It is the counterpart of the room called "common house," or "common hall," which formed part of every Benedictine monastery. The "Eton Boy," if we remember rightly, characterised the combination-room or common room at Eton as a room in which the masters congregated at certain times of the day "for reasons best known to themselves." We can recall one combination-room,—we will not say in what college,—which lives in our memory as the scene of the production of some of the best port we ever remember to have come across; but these are memories out of keeping with the gravity of the present occasion, although Lord Tennyson has recorded that,—

"Softly, through a vinous mist,
My College friendships glimmer."

We commend to the reader's attention the long, interesting, and largely-illustrated chapter on that fascinating subject, "The Library," which follows that on the Combination-room, but of which we have not space to say anything. Some of the interesting points in the architectural history of the separate colleges we must touch on in another notice.

NOTES.

AFTER surmounting difficulties and obstacles which would long ago have given the death-blow to many a less ambitious project, the promoters of the Manchester Ship Canal have placed their scheme before the public for investment. The prospectus issued on Tuesday last shows that of the eight millions share capital authorised, 7¼ millions are offered for subscription in 10*l.* shares, and that 4 per cent. interest will be paid on the amount called up during the four years required for construction. The special authority for this payment of interest out of capital was one of the few Acts of general interest passed by the late short-lived Parliament, and this will doubtless considerably influence the investing public. It was certainly desirable, after the promoters had succeeded in satisfying Parliament as to the practicability and utility of the scheme, that its progress should be facilitated, and these special powers are calculated to have that effect. The canal is estimated to reduce the expense of conveying merchandise from Liverpool to Manchester 50 per cent., besides lessening transshipment risks, and expediting delivery. It will be navigable for vessels of the largest tonnage, and will serve Manchester, Runcorn, and Warrington direct, and indirectly a very large manufacturing district; besides which the directors hope that it will be the means of creating local industries, and that they are justified in anticipating dividends of 18 per cent. If these hopes are realised, it is evident that not only will great benefit accrue to the trade of Manchester and district, but that this will be very much at the expense of the Liverpool Dock Companies (in spite of the repeated declarations of the Liverpool opponents that their commercial interests would be quite unaffected, and that they were only anxious about the effect on the Mersey) and the railways serving between Liverpool and Manchester. The natural and persistent opposition of these interests has caused the preliminary expenses to reach the enormous sum of 146,000*l.*, and the men of Manchester may look upon the struggle as a brilliant Parliamentary success. We hope that Messrs. Lucas & Aird, who have contracted for the execution of the whole of the works for 5,750,000*l.*, may be equally successful in overcoming the difficulties of construction.

IN another column we print a long letter on the Tiryns question from Mr. Stillman, whose main object seems to be to refute the idea that he was actuated in his attack upon Drs. Schliemann and Dörpfeld by any personal motive. This may be; but from what we have heard of other matters besides the Tiryns controversy, we incline to think that Mr. Stillman has, to say the least, an unfortunate proclivity towards attacking those who have made discoveries in which he has had no share. In a letter in the *Times* of the 16th, Mr. Stillman thinks it necessary to explain to the world in general and to Dr. Dörpfeld in particular the special claims of Mr. Penrose (behind whose coach Mr. Stillman seems to have climbed) to be regarded as an authority on Greek archæology, a matter on which we do not believe Dr. Dörpfeld requires to be enlightened. The same issue of the *Times* contains a letter from Dr. Dörpfeld in regard to the antiquity of the stone-saw and tubular drill, in which he mentions the evidence of the use of these tools on two fragments of "the dome-like sepulchre at Mycenæ," which are in the Archaic Room at the British Museum, numbered 220 and 221. We have examined these carefully, and have no doubt of the correctness of Dr. Dörpfeld's statement as to the evidence of these fragments, the authenticity of which we presume will not be disputed. The question as to the Tiryns walls can only really be settled on the spot; but we take it that Dr. Dörpfeld is a much tougher and better-equipped antagonist than the *Times* and its irrepressible correspondent seem to be aware of.

THE advertisement inviting candidates for the appointment of Superintending Architect to the Metropolitan Board of Works has attracted a much smaller number of aspirants for the post than might have been expected, looking to the amount of the salary offered and the dignity of the position. Only twenty-one candidates have presented themselves, and among these but few well-known names are to be observed. One of the competitors, Mr. De Bionville, was engaged from 1872 to 1881 in organising the Office of Works in Japan. Some of the candidates appear from their lists of works executed under their supervision to be engineers rather than architects. The following is a complete list of candidates: G. J. Barry (Liverpool), C. A. C. De Bionville, F. S. Brereton, F. Caws (Sunderland), J. G. Gibbins (Brighton), B. T. Giraud, H. Roumieu Gough, Horace Gundry, J. Stanislaus Hansom (Kensington), J. Lewis Holmes, F. W. Hornblower (Liverpool), H. Lovegrove, J. Douglass Mathews, J. H. Nuttall (Liverpool), Edward Power, T. Sington (Manchester), P. Gordon Smith (Architect to the Local Government Board), E. J. Tarver, Robert Walker, W. Woodward, T. C. Yates. The limitation as to age has probably cut out some candidates of whom we heard. We can hardly see that Mr. Vulliamy's shoes will be filled out of that list; but we would at all events urge on the Board the desirability of appointing to the post an architect and a man of general education, not a mere surveyor, however energetic, business-like, or "pushing" he may be.

THE last great event in the railway world has been the completion of the Canadian Pacific Railway, which is now open for regular work the whole distance from the St. Lawrence river to Vancouver, in British Columbia. The first daily through train left Montreal on Monday, June 28th, at 8 p.m., and reached the Pacific terminus on Sunday morning, July 4th, only 132 hours' journey from sea to sea, and quicker by about twenty hours than the usual trans-continental journey from New York to San Francisco. It is, even in these days, when there is little room left for wonder, a stupendous achievement, and it is impossible to foretell the changes which it will bring about in the great lines of ocean and railroad traffic. Even now, at the very outset, the Japanese, than whom a more clear-sighted trading population does not exist, are preparing to take advantage of the reasonable through rates to send their tea to Europe *viâ* Canada. A great future is before Vancouver, as the Pacific point for so much European and American traffic, while British Columbia will be able to offer vastly greater inducements to settlers.

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IN the Seventh Annual Report of the Archæological Institute of America the question is raised how best can the Institute follow up its recent signal successes at Assos. Two fields for exploration for the coming winter and spring are suggested, the Cyrenaica and Magna Græcia, but the report evidently inclines to Magna Græcia as more attractive and also more accessible. Tarentum, Croton, Sybaris, all the network of Greek colonies, have to be scientifically investigated, rich finds of terracottas having already stimulated discovery. The report proceeds to say, "As a site for research, Tarentum would seem to unite many advantages: the climate is healthy, so that excavations might be carried on during the entire year: the modern city, on the site of the ancient Acropolis, would furnish an abundance of workmen; and, finally, desultory excavations have here, more than at any other site, yielded satisfactory results." The British Museum, we may add, possesses a horse's head of great merit from Tarentum, recently presented by an amateur explorer. It is pleasing to find that the recommendation of the report has been acted on. The Council has decided to send Mr. J. Thacker Clarke, the leader of the recent Assos expedition, in command of an exploration to some Magna Græcia site. In addition to funds supplied by the Institute, the sum of 2,000 dollars is required. The editor of the *American Journal* prints an appeal for contributions to be sent to the managing editor, Baltimore, before October 1st. If sufficient funds are forthcoming, the work is to be begun early in the winter. With our own British School at Athens, and the Egypt Exploration Fund to support, it can perhaps scarcely be expected that England can help, but it is well that an object so praiseworthy should be widely known.

SO much has been said of late about Pelasgic architecture in connexion with the various explorations or discoveries in Greece, Italy, and other countries, that a few words concerning these remote people may not be altogether out of place. As far as their history goes, they are almost mythical, the principal authority concerning them being Dionysius of Halicarnassus, who states that they came from Asia, and colonised Greece, Spain, and Italy, making a very decided mark wherever they settled, and becoming powerful and wealthy. Their date is vaguely put at some fifteen centuries before Christ; but, however this may be, their architecture had a pronounced character, and although it was of an exceedingly rude type, with scarcely any idea of sentiment or art, it was clear that the builders of that age were expert, and that they knew the principles of good construction. Wherever found, Pelasgic, Phalasgic, or Cyclopean remains consist of walls of the rudest and roughest description, inclosing areas, which Homer believed to be devoted to the worship of the gods,—ponderous masses of stone cut in irregular parallelopipeds and polygons, all put together without the least appearance of cement or mortar. In a few cases, such as in the walls of the Acropolis of Cephalu, there are some evidences of a higher type of architecture, the doorway having jambs and cornices of an Egyptian character and with slight approaches to ornamentation. The Pelasgic buildings hitherto found in Italy are as follow:—The ruins of Fanum (recorded in Virgil), at Terracina; the ruins of the sanctuary of Mars at Fiora, now Forano; remains of walls at the Lake Fucino; the Sanctuary of Circe at Promontorio Circello; walls at Fondi, Alatri, and Ferentino; walls of the Acropolis at Cephalu and at Core (now Cora); well at Tusculum with conical arch; walls at Cortona and Trebula, the latter called the "Devil's walls."

THERE has, for twelve years, been in existence in Edinburgh a club called the Cockburn Association,* having for its object the conservation of ancient and interesting structures in the city, and the keeping of a vigilant eye upon contemplated improvements, and offering suggestions connected therewith. It appears from the last annual report of the Association that, amongst other matters discussed, was a proposal to restore the Chapel Royal at Holyrood. At the annual meeting of the Association, held on the 16th inst., Lord Moncreiff, the chairman, in moving the adoption of the report, said that "in regard to the restoration of Holyrood Chapel, it was not intended to express in the report any opinion upon that proposition except this, that a relic so interesting to the whole nation ought to be at all events preserved as far as it could be in its existent state, and if any operations were to be carried out with the purpose of restoration, that these should be conducted with the greatest care and attention. His own opinion was that while preservation of course was exceedingly desirable, restoration was not possible." The restoration of the old Parliamentary hall of the castle, which is being carried out by Mr. H. J. Blanc at the cost of Mr. Nelson, publisher, is quite another matter. The hall has been divided and applied to quite other purposes, and its restoration does not involve the obliteration of details executed by the hands of Mediæval masons, as might be the case were Holyrood Chapel subjected to the manipulation of the modern workman.

* The Association takes its name from the late Lord Cockburn, who had an intense love for the northern metropolis, and who, shortly before his death, published a vigorous pamphlet, with the title, "How best to Destroy the Beauty of Edinburgh," in which, amongst other pithy things, he declared that he "would sooner hang a city magistrate than cut down a city tree."

THE designs for the new Church of St. Paul, in the Vicarage Gardens, Kensington, are now on view in the Kensington Vestry-hall. The church is to replace the present iron building, and is to seat 1,000 worshippers, at a cost of about 10*l.* a sitting. There are eight sets of designs, none of which rise to any remarkable degree of excellence, though several represent what would be very convenient and not unattractive churches. "Janua Cœli" has a long building with nave and chancel under one roof, with lean-to aisles and a glazed porch or narthex at the west end. The elevations show a fine tower over the north porch, which would be an effective feature commanding the length of the street approaching it, but this feature is omitted in the rather hastily drawn exterior view, and a bald and rather ugly porch is shown instead. The church is in brick, and very early in character, with round-headed clearstory windows and a concrete hexpartite vault shown in a scratchily drawn interior perspective which does nothing like justice to the design. "Credo," in a very neat and effective set of drawings, shows a design somewhat similar in general idea to the last, but later in point of style, and with large transepts that effectively break the length inside and out. The beautifully-drawn interior view shows a more decorative treatment than has been attempted in most of the other designs. The church is in three spans, each covered with quadripartite wooden vaults; there is no clearstory, but the lofty aisle windows would give ample light to the interior. There is no external feature in the shape of tower or turret. In plan both these designs are simple, orthodox, and convenient. "Design," in a careful set of drawings, with two coloured perspective views, shows a design somewhat ambitious in arrangement, and perhaps more appropriate to a larger building. The chancel has an apsidal termination, with an ambulatory round it, and vestries beyond, the effects produced by this arrangement and by the lofty nave arcade would doubtless be fine, but outside the short nave and squat bell-turret rather spoil the effect. We have some doubt whether it would be possible to carry the bell-turret with the support shown. "Hope" exhibits a somewhat fussy and broken-up design in a set of drawings of similar character; the good feature of the building would be the very considerable amount of open space obtained immediately in front of the pulpit, but everything else seems sacrificed for that advantage. This competitor shows a vicarage house. The style is early, with lancet windows. "Three Bells" shows a fair design of Late Gothic type, and "Rabacim," a simple building with lancet windows and a rather ugly squat tower or belfry nearly on the ground.

IF a person were asked whether a chapel was a house, he would be inclined to suppose he was being asked a riddle. This, however, was the question which the Court of Appeal in Wright *v.* Ingle ("Law Reports," 16 Q.B.D., 379), had to decide. But, in truth, the question arose on the 105th section of the Metropolis Management Act, 1855, by which a Vestry is empowered to pave a new street, and "the owners of the houses" forming it are to pay their share of the expenditure. The case in question decided that the Wesleyan Chapel the subject of the action was a house, and that the trustees were the owners within the meaning of this Act. The reasons for this decision depending on the consideration of the Act in question cannot now be entered into, but it is worthy of note that the Court also held that a church, being a consecrated edifice, its legal status was changed, and it thus could not be called "a house" within the technical meaning of this statue. It is not altogether beside the mark to observe that, though chapels cannot be used as dwelling-houses while employed for religious services, yet it is possible to point to dwelling-houses which were at one time chapels, and in consequence of not being consecrated have, after some internal additions, been used as dwelling-houses. For the definition of a house for the purposes of this Act given by Lord Esher was,—land upon which there is a building which "is or may be used for the habitation of man."

A CLAMOUR seems to have been raised in Acton by some ratepayers because the Acton Local Board altered their scheme of drainage, without advertising afresh for tenders for the carrying out of those alterations, and because the oral concurrence only of the District Inspector, and not the written approval of the central authority, had been obtained to the carrying out of those alterations. The Board proposed to lay through Chiswick to the River Thames a 5-ft. culvert effluent sewer, but they soon discovered that the laying of this wide sewer through private lands in a neighbouring parish would involve very large outlay in the shape of compensation for disturbance to private owners. The Local Surveyor, Mr. Lailey, hit upon a plan, which afterwards obtained the approval of Sir Joseph Bazalgette, by which the sewer could be reduced to more than one half its originally proposed size, by the erection at the pumping-station of an effluent storage tank which would act as a reservoir during flow tides; the storage capacity necessary in these circumstances being simply transferred from the pipe to the tank, with the result that the Board save nearly 6,000*l.* on the cost of this portion of the scheme. Yet some of the ratepayers objected to these alterations, though they led to a saving. The Local Government Board has now written to the Acton Board that it offers no objections to the alterations in question, though the central authority is silent on a very important point,—as it very often is,—whether these alterations should have formed the subject of a fresh contract. Its silence may be taken as an approval of the Local Board's action in the matter.

THE collection of the works of Rubens belonging to the Duke of Marlborough, and now awaiting dispersion by the hammer in Messrs. Christie's galleries, is a very remarkable one from a Rubens point of view, though we confess it does not excite us to the enthusiasm which we have seen expressed about it in some other quarters. Taking each of the principal pictures separately, one recognises fully the force and richness of the work, in spite of its want of sentiment; but a whole roomful of works of this type, however powerful in themselves, does not impress us pleasantly. The collection probably will not be kept together, however, and each of the larger paintings will most likely go to a separate owner; and one such "robust" painting in a house, provided there is a large hall or gallery to

hang it in, one could do with. We doubt, however, whether Rubens has the value in the pictorial market that he once had; but the sale will bring this to a practical test. There are other pictures of interest, of the Dutch School, and a very fine collection of china, which should be looked at.

WE are glad to see that the venerable old border town of Shrewsbury is seriously taking in hand the question of a better water-supply, which the recent attacks of typhoid in the suburbs show is a necessity that can no longer be delayed. The present scheme, which is estimated to cost 25,675*l.*, is to tap the Severn a considerable distance above the present intake, so as to escape the sewage of the town and of the County Lunatic Asylum, which now falls into it. From this point the water will be carried to Shrewsbury by gravitation, and a pumping-station, service-tanks, and wells will be provided. The new intake is proposed to be made at a distance of 200 yards from the Asylum outfall, but, if advisable, it is perfectly easy to increase this distance at a very small cost. An alternative mode has been suggested of bringing the water from the Church Stretton Hills, a distance of over twelve miles, but there is no reason to suppose that the water would be any better, while the cost of the undertaking would not be less than 100,000*l.*

AT the Goupil Gallery is a small but very varied collection of pictures that have been exhibited in this year's *Salon*. It includes Bouguereau's "Spring," a picture affected in idea but exquisite in execution, both in the drawing and colouring of the figure. Israels' pathetic picture "When one grows old," representing an old peasant-woman, as brown and gnarled as an old tree trunk, trying to warm her hands over the fire, gains additional effect by contrast with its next neighbour, "L'Eveil," by Carolus Duran, a young girl in the first flush of youth, half reclined on a luxurious couch with an amber satin drapery as a back-ground. Flameng's "La Jeu de Fusil," landscape with architecture and figures, is a wonderfully powerful representation of a hot, bright daylight effect, with buildings and figures equally well treated. There are two fine coast scenes by Mesdag, and a view of Windsor Castle by Mr. F. M. Boggs (one of the French-American artists), powerful and broad in style, and a welcome variation from a certain English painter's eternal purple Windsors; but unfortunately the great tower, and the buildings adjoining it, are all palpably leaning to the left, looking doleful to the architectural eye.

A NEW DRILL-HALL AND AN OLD ARTILLERY GROUND.

EXCLUDED from Westminster Hall, the 7th Middlesex Rifle Volunteers,—more familiarly known to our readers perhaps by their Cockney appellation of "London Scottish,"—have just established themselves on a plot of land at no great distance therefrom. The new headquarters are close to those, behind Auckland stables, which were opened on the 22nd of May last for their comrades in arms, the Queen's (Westminster). For the capacious drill-hall with its appurtenant buildings and offices* was taken a site (whereof presently as Palmer's Village) that possesses more than ordinary interest in connexion with the annals of our citizen soldiers. Situated by the end of Brewer's-row, behind the Emanuel or Anne Lady Dacre's Hospital, and just north of Victoria-street, it verges upon the old Westminster Artillery Ground, one of the areas which formerly were set apart for military exercise. At the present day Victoria-street traverses Palmer's Village and the northern side of that ground. In Strype's Stow (1720) this is cited as "the new Artillery Ground." It then covered some 1,400 square yards; whilst its confines might be clearly traced through the surrounding fields, gardens, and waste lands. The actual locality, however, would seem to have been devoted to martial uses from a much earlier period, inasmuch as we have record of the parishioners being required to provide certain archers' butts in compliance with a precept from Queen Elizabeth. It is beyond our province to discuss how the arquebus and fire-lock, coupled with the adoption of brass pieces, superseded the obsolete artillery for their skill wherewith the Finsbury and Islington marksmen, together with their compeers, the "dukes," "marquises," and "earls," of Shoreditch, Clerkenwell, Pancras, &c., had been so justly famed. In course of time the Westminster ground proved too limited in extent for the safe discharge of ordnance or musketry. And though as lately as 1763, *teste* Bardwell, there were "no buildings in Tothill-fields, or on the Artillery Ground," the latter soon suffered considerable encroachment. In fact, it disappeared almost entirely, before the building operations which, until recent changes, rendered this one of the most densely crowded and ill-favoured quarters of the town. Artillery-place, Artillery-row, and the Artillery Brewery alone survive to tell a bygone tale.

Nevertheless, it is curious to recall how certain little oases remained, even to within living memory, to bear testimony to the *ci-devant* rural character of the district. Under this category we may instance the many garden houses, not forgetting Milton's in Petty France; most of them cottages, though, with their dwarf wooden palings and trellis-worked doorways. The few examples of these that can still be found by him who shall be at the pains to seek for them are but awaiting their turn to vanish in the general demolition which is clearing away old Westminster. Of such a kind too were Brewer's Green, Palmer's Village, and the now altered Strutton, or Stretton, Ground. The last-named derived its title from Stourton House, a mansion of the Lords Dacre of the South, descendants of Sir Richard Fienes, Constable of the Tower and Lord Chamberlain to King Edward IV.'s consort, who, having married Joane, heiress (1547) to her grandfather Thomas, sixth baron, was summoned to Parliament during the interval, 9th October, 1459, to 15th November, 1482.* According to Bardwell, *ut suprà*, there were, barely 125 years since, "but few houses in James-street, and none behind it; nor any filthy courts between Petty France (York-street) and the Park; nor any buildings in Palmer's Village or Tothill-fields." Situated south-westwards of the Great and Little Almonries, and lying below the river high-water mark, the village site came to be thus styled from the twelve almshouses, with a chapel and a school attached thereto, which one James Palmer, B.D., founded (1654) in Tothill Side. His almshouses and school, as also, we understand, the Black Coat School, abutted on Palmer's-passage; the Army and Navy Hotel, by Christ Church, Victoria-street, and the vacant space at its rear, represent their original position. Beyond Palmer's-passage, *nunc* Palmer-street, between the hotel and the Peabody-buildings, stood Nicholas Butler's Almshouses (1675), near to the existing Blue Coat School. The Palmer and Butler charities are newly settled in Rochester-row. "The Blew Coat School, built in the year 1709," as witness the inscription, beneath the statue, on its northern front,† stands for a while secure on the southern side of Caxton, *prius* Little Chapel-street, just between the new drill-hall and the walk locally known as Blue Coat Ring. Its own three-sided plot of ground further encloses the master's dwelling-house (1709) and the Girls' School (1868) adjoining thereto.

"Palmer's Village" does not appear in the "Company of Parish Clerks' New Remarks," 1732; or in the "New Complete Guide," fourteenth edition, for 1774-5; or in R. Wilkinson's "New and Improved Plan of London, Westminster, and Southwark," 1799. In J. Lockie's "Topography of London," 1810, it is stated to be "about half a mile from Buckingham-gate along James-street bearing to the right entrance on the north side of Bridewell. To this description the volume for 1813 adds "Brewer's-green."‡ In his "Curiosities of London," 1855, John Timbs writes, "Thirty years since here was an old wayside inn (the Prince of Orange), rows of cottages with gardens, and the village green, upon which the maypole was annually set up; this rurality has now disappeared, and with it from maps and plans the name of Palmer's Village.'" Hardly so: the village is distinctly set out, and by name too, in Cross's large map of 1836, whilst the site is indicated in the "Ordnance Survey," 1869. Timbs, moreover, is wrong apparently when he says that the almshouses were "built in 1566 by the Rev. Edward [*sic*] Palmer." We are credibly informed by an aged man who recollects to have disported in his youth around the maypole that the village green can at this date be identified with the ground occupied by the Army and Navy, and the Army and Navy Auxiliary, Stores. The village inn, by sign of the Prince of Orange, and the Blue Coat Boy (as the Albert) have been rebuilt. Some would maintain that Brewer's Green is but another name for the village green. However this may be, Brewer's Green appears as a postal address in the Directory for 1865. Rebuilt as a stable-yard, Brewer's-row represents the pleasant grove that led to the brewery behind the modern Victoria-street; Brewer-street, and the tavern sign of the "Two Brewers" in Buckingham-row (since, together with Little James-street, absorbed into James-street) demonstrate how this quarter has long been in favour with the brewing fraternity.

The Green's Brewhouse of R. Wilkinson's map, quoted above, and shown thereon as next south of the chapel,—Dr. Dodd's chapel,—in Charlotte-street, Stafford-row, we take to be the predecessor of the Stag Brewery,—Elliot & Watney's, lately re-constituted as Watney & Co., Limited. There, at the Stag Brewery, they render familiar to us the white hart, a favourite cognisance of King Richard II., which is frequently repeated along the sculptured interior string-course of his Westminster Hall.

Other changes are imminent in this locality. For example, the Corporation of London are open to treat for the conversion of the property occupied by the Emanuel Hospital, James-street, lying between the Drill-hall and the Westminster Congregational Chapel (1840) which has supplanted the former Westminster Hospital. Dacre's Almshouses, by the way, form one of the views in this year's series issued by the Society for Photographing Relics of Old London. Again, some old freeholds at the elbow of James and Caxton streets are in the market. We may here remind the members of the "London Scottish" that their compatriots in arms, though under very different circumstances, have been at Westminster before them. Heath's *Chronicle* relates how the Scots prisoners of 1651 were driven like to a herd of swine through Westminster to Tothill-fields and there sold to several merchants, and sent to the Barbadoes,—the oldest, as such, by the bye, of our British colonies. We read, moreover, in one of the Chetham Society's Civil War Tracts of Lancashire that of these "Scots, Highlands, or Redshanks," to the number of 4,000,—and who were accompanied by their gude-wives and bairns,—no less than 1,200 were buried in Tothill-fields.

THE COLONIAL AND INDIAN EXHIBITION:

STONE CARVING, METAL-WORK, AND TEXTILES IN INDIAN COURT.

THE skill shown by the Hindoos in their wood-carving is even more strikingly manifested in their stone-carving, for this latter material seems to be better adapted for displaying the skill of the cunning worker than wood. What will strike many people who examine Indian stone-carving for the first time in detail is the very Classic character of its *motifs*. Fig. E (see lithographed plate), taken from a sandstone screen from Multra, is conceived in the best spirit of Classicism, being chaste, graceful in the flow of its lines, and yet full of crispness, character, and swing. Fig. C, again, simple as the design is, is Classical in the best sense, and has all the reserve and simplicity of one of the Hellenic historic borders. Fig. A bears a strong likeness to fig. E, and the breaking up of the continuous scroll by the interposition of the flowers is very happy. But the skill of the Hindoo stone-carver is even more strikingly shown in the scroll-like panels

* The building was described at some length in the *Builder* for June 19 last, p. 879.

* The Lords Dacre, of the North, were descended from Sir Humphrey Dacre, whom Edward IV. elevated Lord Dacre of Gillesland, co. Cumberland, the ancient seat of the Vauxes. He was uncle to the Joane of the text.

† At the back, above the fresco of a scholar, is inscribed "This school founded 1688."

‡ For notices of the site and demolition of this prison, see the *Builder*, xlvi. 244-245 (8th and 15th March, 1884).

Metal-Work in the Indian Exhibition.

in figs. B and D. Fig. D, from Jodpur, is a pierced or fret-work pattern, and is of singular and unique beauty. This pierced stone-work is largely employed by the Hindoos in the decoration of their buildings, and it is rather surprising, seeing the qualities gained by this stone fret-work, that European builders have not introduced such work into their buildings. We have nothing equivalent to such work. Fig. D, like figs. A, C, and E, is in slight relief, and is most delicately and beautifully carved. It is a very perfect piece of designing,—especially so in the way each scroll springs from a sort of ornamental sheath, a plan followed in nature, the great teacher and master. In much of the stone-work the surface is not smoothed away to look like polished stone, but is left with the work of the chisel upon it.

METAL WORK.

There is in these courts a very fair display of well-designed and skilfully-executed metal-work, and in selecting a few specimens to sketch one feels that one omits many examples simply for lack of space, for the general excellence of Hindoo metal-work is well known. All we can attempt to do here is to draw attention to some few specimens which we have selected, not only for their intrinsic beauty, but also as being types of large "schools" of work; for all Indian work easily divides itself into "schools," and the craftsmen educated in the various schools devote themselves to producing work within the limits of their knowledge and training. We see this well exemplified in the silver work from Cutch (figs. 1 and 9: see engraving). The pattern is left in relief, the background apparently being dug out to the depth of from $\frac{1}{16}$ in. to $\frac{1}{8}$ in. The pattern consists invariably of continuous scrollwork, as in fig. 9, or of symmetrically-arranged patterns, where the surface is divided up into panels, as in the water-cooler (fig. 1). The Hindoos are generally very happy in the shapes both of their pottery and metal-work,—a remark that cannot with truth be applied to the silverwork of the Colonies, and it is to be hoped that both the representatives of the firms exhibiting from the Colonies, as well as English craftsmen, will take to heart some of the lessons taught by the display of Indian craftsmanship.

Fig. 2 is a rose-water sprinkler from Lucknow, and is both *repoussé* and chased. The general effect of this sprinkler is richness, and yet when we analyse the *motifs* of the decoration we find them simple and familiar in character. It is in their disposition and adaptation that the skill of the craftsman is shown, the *motifs* themselves being evidently common property,—a statement that applies with equal truth to most of the other work in the courts. Fig. 3 is a brass Hastawa from Jeypore, and is very quaint and piquant in shape. The body of the Hastawa is formed of a series of rounded ribs, while the top, bottom, and spout are square-sided. The decoration consists of engraved patterns.

Figs. 4, 5, and 6 are specimens of the well-known "Bidri" ware. The vessels are of iron, and the patterns of silver let into the iron. To increase the richness of the effect, the pattern in fig. 6 is chased or carved. Figs. 7 and 8 are from Madras, and are known generally as "mixed" metal work, the body being copper,

Metal-Work in the Indian Exhibition.

iron, or brass, and the patterns silver, copper, &c., either let in, as in fig. 7, or put on in relief, as in fig. 8. Fig. 10 is a shape frequently used by the Hindoos, and the surface is decorated in different ways; sometimes with patterns in slight relief, the background being removed; sometimes with patterns made by punching in a line so that the decoration has the appearance of being incised, as in fig. 10; sometimes with engraved patterns, and sometimes with *repoussé* work. When the pattern is incised the background is very often roughed over by means of punches. The flowing pattern in fig. 10 is very pleasing.

Fig. 11 is a specimen of Kopt work from Travancore. The pattern is in slight relief, the background being removed and blackened. The shape of this specimen is peculiarly elegant.

Fig. 12 is a specimen of Kashmir enamelled work. The enamels, which are transparent, are let into the background, the pattern being in brass. There are also a number of specimens of enamelled work from Lucknow, the colours generally employed being turquoise, deep blue, green, yellow, and madder brown. We have not figured any of the Benares brasswork because it is much more familiar in this country than the metal work of other states. The Benares work is beginning to smack of the manufacturer.

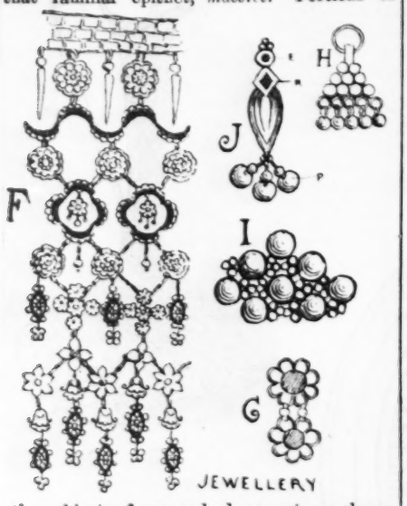
Fig. 13 is a large brass cooking-pot from Lucknow, ornamented with a punched-in pattern. The decoration is peculiarly suitable, being very simple and bold in character. This decoration is executed quite freehand, and has a peculiar charm by reason of its unstudiedness. The Indian *repoussé* work is wrought, most of it, in the same way, the craftsmen designing the decoration as he goes, his eye being his only guide.

Fig. 14 shows a Hugli water-pot with two schemes of decoration shown on either side, A and B. The pattern is punched in, and then the surface between the lines, instead of the background, is roughened with punches. The price of such a pot is marked 7s. 6d.

Many of the *repoussé* plates evince great judgment on the part of the craftsmen in arranging simple patterns to the best advantage. Take the Lucknow dish (fig. 15) for instance. Nothing could be simpler than the *motifs* used in this plate, and certainly nothing could be more effective than it is, considering its price is 15s. So, too, with the other Lucknow plate, of much larger size, priced 30s., a segment of which is shown in fig. 16. The patterns in all Hindoo work may be said to be traditional, and they will, in all cases, be found to be such as are most readily produced by the worker with his materials. The patterns have, in fact, slowly grown (or been evolved) to their present form during the practice of the various crafts by generations of craftsmen, until they assume their recognised perfect form; for there must come a time in art work when the maximum of result with the minimum of labour is obtained, and when the elimination of all unnecessary and militating details can be carried no further. This is so with the familiar Greek *motifs*, and equally true of the Hindoo patterns.

Jewellery.—Jewellery in this country rarely now claims our attention by reason of its art qualities. The imitation of commonplace objects, such as chain cables, anchors, whips, *et hoc genus omne*, is about the highest flight of most gold and silver smiths. We constantly transgress the axiom of the Japanese, that "the value of metal work should not be found in the pot," for a large mass of modern jewellery is valueless except as valuable metal. The same objects wrought in iron would not be looked at twice. Some of the Burmese jewellery is very graceful and full of individuality. The jewellers there apparently recognise the beauty of effect to be obtained by

linking a number of small patterns together.* The necklace, fig. F, is composed of many hundreds of small patterns, as shown in the portion figured, and is very elegant and lacy. The amount of the precious metal used is comparatively small, for it is beaten and drawn out very thinly, and the necklace is the reverse of that familiar epithet, *massive*. Portions of



other objects of personal adornment are shown at G, H, and I. The introduction of gems is shown at J, which represents one pendant of a necklet composed of a number of such pieces. The letters E, R, and P refer to the several objects introduced, viz., emerald, ruby, and pearl.

The Travancore gold and silver lace is worthy of attention.

TEXTILES.

In this department there is much that is interesting as well as much that is unpleasing to English tastes. There is not much in the way of embroidery that calls for special comment, nor are the gold brocades quite as satisfactory to us as to the rich Hindoo. There appears to be nothing between the simple cotton garments of the poor folk and the sumptuous apparel of the rich, and the one strikes us as being as much too elaborate as the other is deficient in beauty or interest.

Some of the carpets are good; those from Agra especially so. The chief beauty of a carpet is its colour; the pattern should be quite a secondary consideration, and in carpet-weaving some of the Hindoos appear to be quite as skilful as the Persians. It seemed worth while noting down the following four schemes of colour of four particularly well-arranged examples of colouring. No. 1 is a Thana carpet, the next two are from Agra, and the fourth from Mooltan Punjab:—

1. Purple brown ground, brown pink, yellow ochre, turquoise blue, deep Antwerp blue, scarlet vermilion, cream white, with a little grass green in centre.

2. Deep scarlet red ground, Indian yellow border, and in centre deep blue-black, pale-grey green, light blue, cobalt green-grey, cream, rose pink, raw amber. The general tone is red and yellow.

3. Indian yellow ground, turquoise grey border, deep blue-black, scarlet, purple-brown, sky-blue, white, pale-yellow, cold green. General colour, turquoise and orange.

4. White ground, scarlet vermilion, warm *terre verte*, black, deep blue, deep red-brown.

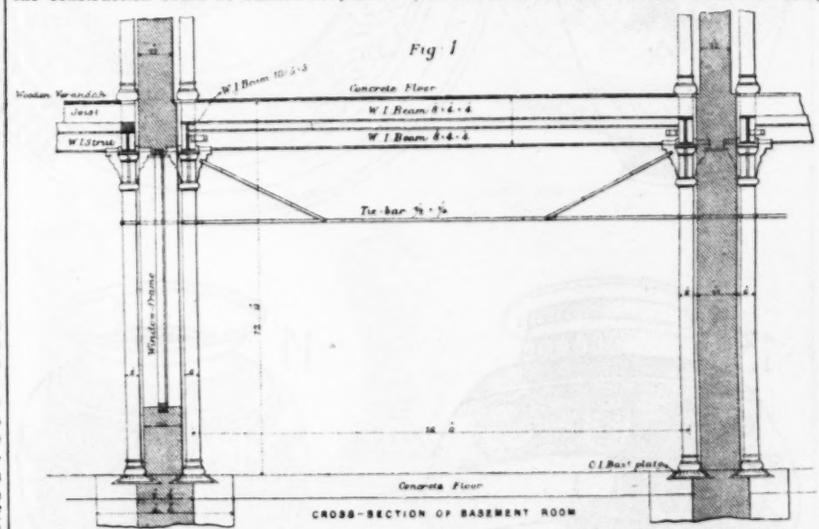
The colours are mentioned in the order of their predominance. A carpet should consist of a number of bright colours, individually pure, and in tone arranged so as to balance and harmonise with each other. All the most beautiful carpets are composed of the brightest and purest colours, and it was left to us to err in making carpets of earthy, neutral colours, at once dull and uninteresting. William Morris is one of the few English designers who seems able to design a carpet of marked individuality, and withal as beautiful as a fine Eastern one. Those who know Peterhouse, Cambridge, have been able to judge for themselves as to Morris's ability in both designing and weaving a really noble carpet. Whatever good mercantile carpets we make they are simply reproductions of Eastern ones, and it really seems as though the Persians and kindred nations had said the last word on the subject. We certainly in this country have not been able to advance the craft of carpet-weaving. Individually, the colours we employ are not as fine as those used in the East. Our dyes seem to lack the brilliancy and luminousness of these Hindoo dyes,—seem to partake too much of our own grey climate. Well-arranged, harmonious colours give the same sort of satisfaction as finely-played chords in music. Owen Jones often speaks of the fine "bloom of colour" of an Eastern carpet, and that is, perhaps, the best expression we can use. A finely-woven carpet has a beautiful "bloom" about it, every colour keeping its place in the scheme.

* The necklets found by Dr. Schliemann at Troy are of a very similar character, being composed of a number of pieces linked together.

CONCRETE BUILDINGS.

IN a paper contributed not long since to the Institution of Civil Engineers by Mr. Walter Smith, an Associate Member of the Institution, some interesting particulars were given of the New Government Buildings recently constructed at Simla in India. These structures are known as the "Secretariat" and the "Army Headquarters," and were composed chiefly of concrete. The points in favour of the use of this material in the case under notice were:—1. Possibility of having a lighter building than one of stone or brick, an important point when the site, as in this case, is on a hillside; 2. The greater rapidity with which the construction could be carried out; and 3. the saving thus made in the Army Headquarters building, below the level of the piers, amounted to 6 per cent. of the concrete used.

Fig. 1



The plentiful supply of material for concrete as against the almost total absence of good building stone, or bricks at a reasonable cost.

The superstructure of the two buildings consists of a framework of iron with concrete walls and floors. A series of cast-iron columns with bracketed heads supports rolled beams carrying the iron joists for the floors, each room being contained between four groups of columns. The arrangement is shown in figs. 1 and 2. The larger of the two buildings, the Secretariat, is four stories high, while the Army Headquarters is a story less.

The foundations were composed entirely of concrete. Where good soil was to be found at no great depth below the ground they consisted of a series of piers carrying the groups of columns, with cross-walls between to support the superstructure. Where, however, the excavation was over 10 ft. in depth groined arches were thrown between the piers, thus forming a series of vaulted chambers.

The stone ballast, which formed the aggregate of the concrete, was chiefly limestone broken by hand to pass through a 1-inch ring. A Blake's stone-crusher had been tried for the purpose of breaking up the material, but proved unsuccessful. The lime was hydraulic, and was ground by engine power. Pounded brick, known as surkhi, was also used, being ground up on the works. The lime after being ground was screened through a sieve of 250 meshes to the inch, except in wet weather, when a 144-mesh was used. The surkhi was screened through a sieve of 132 meshes for fine work, whilst ¼ in. to $\frac{3}{16}$ in. bar screens were used for ordinary work.

The lime and surkhi were mixed together dry in the proportion of one part of the former to two parts of the later for the concrete. It was found that 10 cubic feet of surkhi mixed dry with 5 cubic feet of lime gave 14 cubic feet of mixed material. In the manufacture of the concrete the lime was unslacked, and there was no grinding of the mortar wet: this mixture is referred to as "dry mortar." The lime after being ground dry and screened approached cement in its character, and was treated accordingly. The proportion for the concrete for the walls and arched vaulting was 45 cubic feet of dry mortar to 100 cubic feet of stone ballast, and for ordinary foundations 42 cubic feet of dry mortar to 100 cubic feet of stone ballast. The usual allowance of material for 100 cubic feet of rammed concrete was 117 cubic feet of stone ballast and 53 cubic feet of dry mortar for the walls and arches, and 117 cubic feet of stone ballast and 49 cubic feet of dry mortar for the foundations.

The mixing of the concrete was done by hand. The stone ballast was spread evenly on a table, 14 ft. by 10 ft., laid on a slight slope. A layer of dry mortar was then put on the ballast, and water was sprinkled gently over the whole from watering-cans with roses, great care being taken not to wash away the mortar. After this the mortar was incorporated by drawing a pick several times through the material and then turning it over with shovels.

The concrete was deposited in layers of 3 in., and then thoroughly rammed. Large stones and boulders were often embedded in the mass;

The method of constructing the piers was to mark out the shape of the footings in rough stone walling, lined on the inside with planks. As each footing was completed, and the concrete became sufficiently set, the planks were removed, and the space between the piers was filled up with earth, well rammed. The next footing was then made in a similar manner, and so on, until the springing of the arch was reached; earth was heaped up, well rammed, and moulded by the aid of templates into the shape required for the groining. The advantages of these earth centres were, firstly, cheapness, and, secondly, the ease with which the most complicated groining could be moulded. When this had been accomplished, and the earth was consolidated, the surface was plastered with cow-dung, above which again lime-plaster was placed. The concrete was then rammed on the centres up to the floor level, and, later on, the earth forming the centres was removed. With this method only twice did a trifling settlement occur, in both cases due to heavy rain.

In the superstructure the concrete work consisted of the walls between the cast-iron columns and the floors. The walls were 15 in. thick in the basement, 12 in. in the first floor, 10½ in. in the second, and 9 in. in the third floor. The offsets in the thickness were made on each side of the wall, at the level of each floor, as shown in fig. 1.

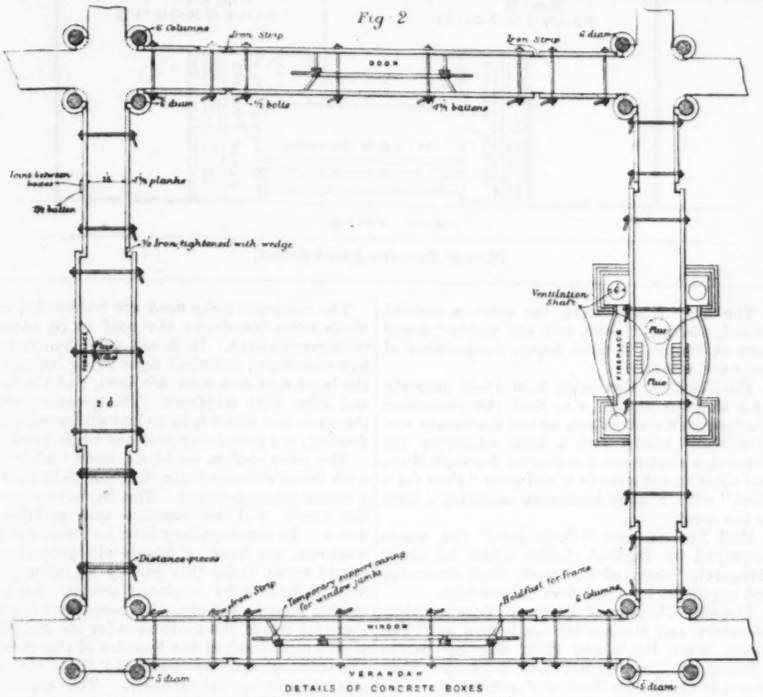
The material used for chimney-breasts con-

sisted of 15 cubic feet of lime to 100 cubic feet of clinker-ballast; this made very fine and close work. The mixing was done in the same way as for the foundations. The first operation in building the walls was to construct a framing of 1½ in. planking, as shown in fig. 2.

The fireplaces and mantelpieces were entirely of concrete, the composition being the same as for the chimney-breasts. In the Secretariat the mantelpieces were omitted when carrying up the walls, and were added at a later stage. Boxes giving the main shape of the mantelpiece were placed against the wall, and the concrete was then rammed in, the details of the moulding being afterwards added in lime plaster. In the Army Headquarters the fireplaces were constructed at the same time as the walls, and the chief features of the moulding were reproduced in concrete. The lower part of the flue was made by ramming the concrete round a core of stones and mud; but when the flue narrowed to 10 in. cores of wood were used. These cores at first were merely hollow cylinders having a slight taper. At every 2 ft. they were extracted by being twisted round, and gradually worked upwards. This, however, disturbed the concrete, and, as there was only 4 in. between the adjacent flues, it was a matter of some consequence. A core was next tried, which consisted of a four-sided tapering piece of wood for the inside, and four segments of a cylinder outside; so that when the concrete had set the centre-piece could be withdrawn and the sides would then collapse.

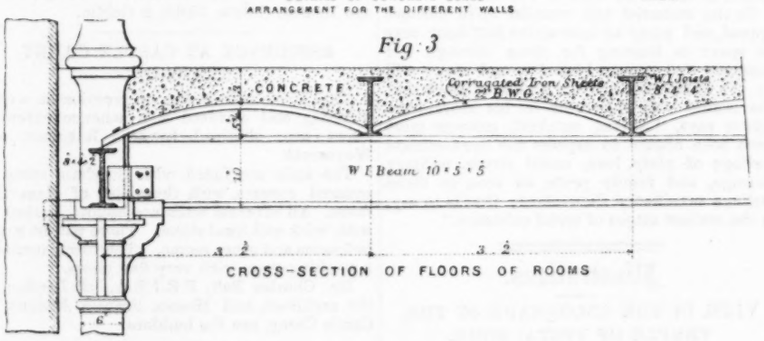
The floors of the buildings were made of concrete laid on curved corrugated iron, resting on the lower flanges of the cross-girders, as shown in fig. 3. The concrete was, for the sake of lightness, of the same composition as that used in the chimney-breasts, namely 15 cubic feet of lime per 100 ft. of hard-burned surkhi ballast. For ramming, a 1 lb. mallet was used, as the ordinary heavy rammer was apt to bulge the sheets. In the case of 6 ft. spans used in the corridors, it was necessary to put temporary supports under the sheets until the concrete had set, to prevent sagging. The concrete was, at first, rammed only flush with the tops of the girders; and, later on, when the tops were to be finished off, about 1½ in. of fine surkhi ballast concrete was laid on and well consolidated, the surface being rendered with lime plaster. The floors thus formed were hard and good.

Fig. 2



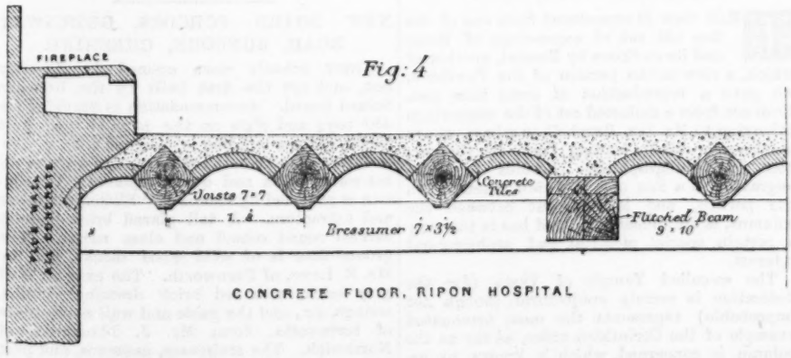
DETAILS OF CONCRETE BOXES
ARRANGEMENT FOR THE DIFFERENT WALLS

Fig. 3



CROSS-SECTION OF FLOORS OF ROOMS

Fig. 4



CONCRETE FLOOR, RIPON HOSPITAL

The estimated live-load for these floors was 100 lb. per square foot, the calculations being made with reference to the rolled-iron joists, and a factor of safety of 4 allowed. With respect to the strength of the concrete arches between the rolled beams, it appears from experiments by Mr. H. Irwin, M. Inst. C.E., that one of the arches of 6 ft. span and 6½ in. rise, without the corrugated iron underneath, was weighted with 6,007 lb. in the centre, equal to a distributed load of 668 lb. per square foot, before cracking.

There were three staircases in the Secretariat, two of which were spiral, ascending to the top floor; the third was carried only to the first-floor. In the Army Headquarters there were two spiral staircases, and central approach steps outside. The latter were formed of an arch resting on two arches abutting against the building. To build the spiral staircases, a set of framing was completed for one story, being made of planks 1½ in. thick, held together by battens screwed on the outside. The concrete was rammed in this framing, and given plenty of time to set before any of the boxing was removed. Each step, which was 13 in. in the tread, and 7 in. in the riser, was a beam of concrete moulded in a frame connected with the side framing of the staircase. The steps were carried up with the walls, so that the whole was one monolithic mass. The proportions of mortar were the same as for the ordinary walls of the building, but the ballast was finer, the cubes being ½ in. to ¾ in. The work was expensive, as the quantity of concrete was small, there being only 500 cubic feet in each story, while the framing contained 252 cubic feet of wood.

The deposition of concrete in the foundations of the Secretariat was commenced in the month of March, and the concrete in the superstructure was practically completed in December of the year following. The quantity of concrete used was:—For the foundations 108,816 cubic feet; for the walls 122,149 cubic feet; and for the floors 32,387 cubic feet; total, 263,352 cubic feet.

The Army Headquarters.—175,165 cubic feet of concrete were used in the foundations, 72,862 cubic feet in the walls, and 16,954 cubic feet in the floors; making a total of 265,681 cubic feet of concrete in all.

The work was considerably interfered with by frost and snow in winter and scarcity of water in the summer. To neutralise the effect of frost salt water was used for mixing the concrete apparently with success.

In the application of concrete to the building of Ripon Hospital, which is a half-timbered structure, planking was screwed on the two sides of the posts, sufficient opening being left on one side for inserting the concrete and ramming it. To avoid any crack between the concrete and the wood from the shrinking of the latter a narrow groove was cut in the sides of the posts into which the concrete went, and as a further precaution old nails were driven into the wood and imbedded in the concrete to form a bond. The usual thickness of concrete panels was 4½ in., including the plaster.

A somewhat novel kind of floor in the Ripon Hospital deserves notice. It consists of wooden joists 7 in. square, laid as shown in our illustration (fig. 4), and carrying curved tiles of concrete. Over the whole floor was spread a layer of concrete composed of hard-burned surkhi-ballast and lime in the proportion of 15 of lime to 100 of ballast, which, when well consolidated, was finished with a coat of ordinary lime plaster or Portland cement. The tiles were made in wooden moulds by beating with mallets, the proportions used being one part of dry mortar to two parts of fine stone ballast.

We are indebted to the Council of the Institution of Civil Engineers for permission to reproduce the illustrations from their Transactions.

The St. James's Dwellings, Beak-street, Regent-street.—The foundation-stone of these dwellings, which are being erected by the Vestry of St. James, Westminster, out of certain trust funds in their hands, will be laid on Monday afternoon by the Hon. Maude Stanley. The dwellings are intended for the accommodation of the labouring poor. Mr. H. H. Collins is the architect, and Mr. Mark Gentry the builder. We will give further particulars in our next.

HERALDIC MOTTOES.

DERIVED to a great extent from such widely divergent sources as war or watch cries and the sentiments inspired by Christianity mottoes are ever a subject of deep interest to the student of heraldry, and the thought has often occurred to us when looking through the pages of "Burke and Debrett" and noting the noble thoughts there recorded on the innumerable scrolls of our aristocracy, suppose that these high and mighty ones lived or acted up to their family inscriptions, what a grand example they would set to the world at large.

Our ancestors delighted in punning and found a fine field for it in heraldry in general and mottoes in particular, and we owe much in this latter branch to this inclination, nor have our modern wits been negligent in a like spirit, and it would be hard to beat, or even to equal the "quid rides" that appeared on the carriage of a retired tobacconist.

Sometimes a mere jingle of words, more or less harmonious, appeared to suffice, as the "Astra castra, numen lumen," of the Earl of Balcarras, and the "Patior Potior" of the Peytons.

Our "Honi soit qui mal y pense" dates from Edward III., with the institution of the far-famed Order of the Garter, and in this reign mottoes came into general use, the king having set the fashion by adopting several for himself.

Mottoes are not considered hereditary by the College of Arms, and a family may relinquish and change them at any time; but, as a general rule, they remain from generation to generation, and become as well known as the arms and crests they accompany. "Dieu et mon droit" is inseparable from the lions of England and has been so since the reign of Henry VI.; before then it was a war cry, and as such is said to have been first used by Richard Cœur-de-Lion at the battle of Gisors.

Some of our cities rejoice in noble and praiseworthy sayings, and we envy the faithful Worcester her "Civitas in bello in pace fidelis." The more modern and go-ahead town of Birmingham is content with the one expressive and appropriate word, "Forward."

Sometimes a spirit of defiance breathes from beneath the shield, such as the "Nemo me impune lacessit" of our Scotch brethren, in conjunction with their national thistle, and it forms a most appropriate combination.

The Dixies of Bosworth, Leicestershire, have laid down a hard and fast rule in their punning "Quod dixi dixi," while the Fortesques have cleverly introduced their name in "Forte scutum salus ducum" and the Vernons are still happier in their double meaning "Vernon semper viret" alluded to in Scott's "Rob Roy."

Cussans records a most waggish motto that was devised for the merchant tailors of London, "Sit merita laus," but the merry ones did not adopt it, admirable though it was and worthy of Hood.

Many are the mottoes found in coats of arms bearing the cross, and alluding to it in a fervent spirit. We instance, "In hoc signo spes mea," for Taafe, and "Cruce dum spiro spero," of the Nettervilles, as fair samples.

Sometimes these pithy sayings were engraved upon the swords of the warriors of the Middle Ages, and the great Earl of Shrewsbury bore on his blade the legend "Sum Talboti pro vincere inimicos meos."

For brevity and completeness perhaps nothing can excel the "Cave" of the family whose name it records with the injunction of caution.

The Fairfaxes have a very practical and semi-punning sentiment, "Fare, fac," which may be freely translated as a word and a blow.

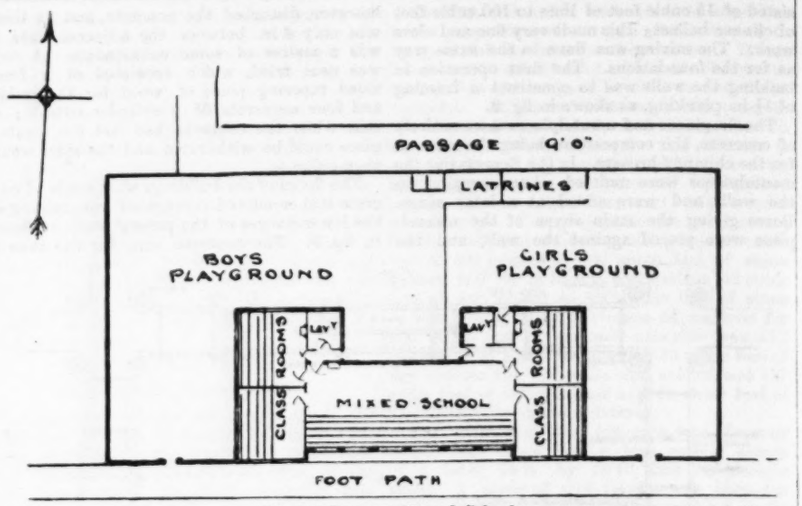
The Martins of Dorsetshire say, "He who looks at Martin's ape, Martin's ape shall look at him," having reference to their crest of the monkey.

Many an antiquary has been greatly puzzled over the "Strike Dakyns: the devil's in the hemp," owned by the Derbyshire Dakynses, and one of the enigmatical class remaining unsolved.

We know of nothing more simple and expressive of resignation than "Whyle God wylli," of the Treffrys, a Cornish family.

Lower records that Dr. Cox Macro, the learned Cambridge divine, consulting a friend on the choice of a motto, was pithily answered with "Cocks may crow."

"Age omne bonum" belobgs] to the Algood family as it ought.



Plan of Runcorn Board School.

The Spry family have for crest a serpent nowed, thereon a dove, and the motto "Soyes sage et simple," a most happy conjunction of arms and words.

The Clerks of Penicuick hold their property by a singular tenure, viz., that the proprietor must sit on a rock known as the Buckstane and give three blasts with a horn whenever the Sovereign shall come hunting on Borough Muir, and their motto records it and runs "Free for a blast" with a demi-huntsman sounding a horn as the crest.

Earl Rothes uses "Grip fast," the words employed by Barthol. Leslie when he saved Margaret, Queen of Scotland, from drowning and urged her to take a firm hold of him.

The clan Chattan of Caithness bore a cat-a-mountain, and their chief was known as "The Great Wild Cat" and their warning motto "Touch not the cat but with a glove" finds record in the "Fair Maid of Perth."

To the humorist and moralist alike mottoes appeal, and many an instructive half-hour may be spent in hunting for them through our peerages and county histories, and many will be the pleasant surprises and reminders that the reader will encounter in his searchings. Lower says, "Among mankind, mottoes must have been chosen to express the predominant feelings of piety, love, moral virtue, military courage, and family pride, as soon as those feelings manifested themselves; that is to say, in the earliest stages of social existence."

Illustrations.

VIEW IN THE COLONNADE OF THE TEMPLE OF VESTA, ROME.

THIS view is reproduced from one of the fine old set of engravings of Rome and its environs by Rossini, another of which, a view in the portico of the Pantheon, we gave a reproduction of some time ago. Both are from a collected set of the engravings belonging to Mr. Jas. Burchell, to whom we are indebted for kindly lending them for the purpose of photographing. Besides that the engraving is a fine one, the view taken within the portico, and looking out between the columns, is an unusual one, and has in this way a certain special pictorial and architectural interest.

The so-called Temple of Vesta (for the dedication is merely conjectural, though not improbable) represents the most attenuated example of the Corinthian order, as far as the column is concerned, which is known to us. The ntablature has long since disappeared. Of the twenty columns one only is missing. Between the columns are seen, in the view, the Temple of Fortuna Virilis and the House of Rienzi.

CHURCH AND PRESBYTERY OF ST. MARY, HAMPSTEAD.

IT is proposed to build this church and presbytery on the site of the existing chapel, to which the space occupied by several houses on either side will be added to secure more adequate ground for the proposed buildings.

The materials to be used are red bricks, with white stone dressings; the roof to be covered with green slates. It is not intended to have any clearstory, sufficient light being insured by the large east and west windows, and the large and lofty aisle windows. The greater part of the nave and aisles is to be laid with wood-block flooring, the remaining portions being tiled.

The nave roof is to be an open timber one, with hammer-beam truss, and the aisle roof of a flatter pitch panelled. The baptistery under the tower will be vaulted and groined in stone. An organ-gallery is to be formed at the west end, the front of which will project with a bold cove; under this gallery an inner porch will be formed by a glazed screen. An interesting feature is a canopied recess provided at the west end of the south aisle for the reception of the altar tomb of the founder of the mission. The chancel will be separated from the two side chapels by oak screens. The architects are Messrs. Goldie, Child, & Goldie.

RESIDENCE AT CASTLE CAREY, SOMERSET.

THIS house is in course of erection on a commanding and elevated site, whence extensive views are obtained towards Burnham and Weymouth.

The walls are faced with Corsham stone in squared courses, with dressings of Ham Hill stone. All external walls are hollow, backed up with brick and local stone. There will be seven bedrooms and other rooms. The tower contains a smoking-room with very fine views.

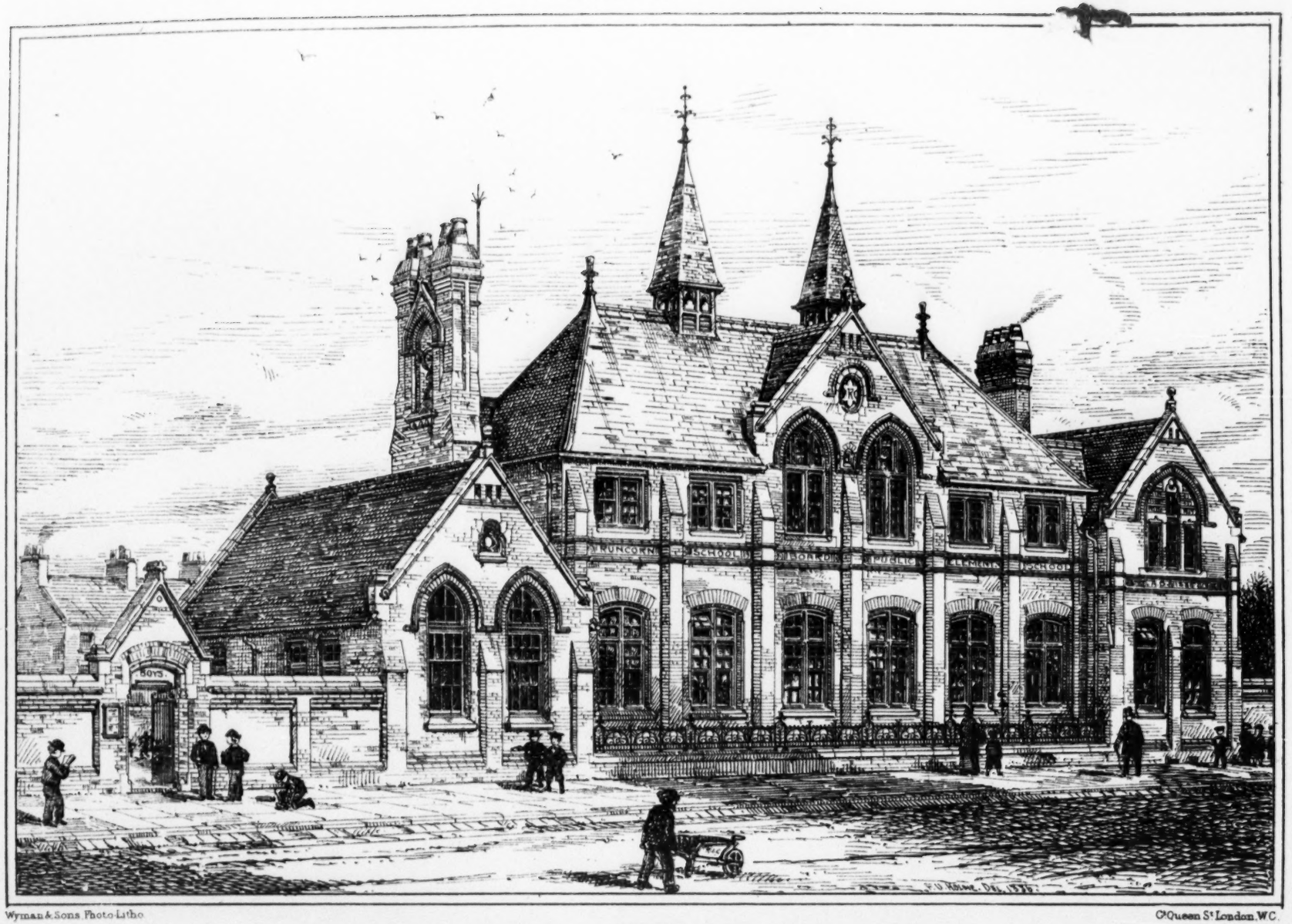
Mr. Charles Bell, F.R.I.B.A., of London, is the architect, and Messrs. Francis & Sons, of Castle Carey, are the builders.

NEW BOARD SCHOOLS, GREENWAY ROAD, RUNCORN, CHESHIRE.

THESE schools were opened in January last, and are the first built by the Runcorn School Board. Accommodation is provided for 450 boys and girls on the ground and first floors, and the building is designed with a view to future extension. The rooms are warmed by hot-water pipes and open fireplaces. Ventilation is provided by means of "Ellison's" inlets and extractors. A tall glazed brick dado is carried round school and class rooms. The ground-floor is of solid wood blocks, laid by Mr. R. Lowe, of Farnworth. The exterior is of grey brick, with red brick dressings, jambs, strings, &c., and the gable and wall copings are of terra-cotta, from Mr. J. Thompson, of Northwich. The staircases, passages, and part of the playgrounds, are of patent "Granolithic" stone.

The latrines are fitted with Messrs. Bowes Scott & Read's patent self-flushing tanks.

The schools, of which a small plan is also subjoined, were designed by Messrs. F. & G. Holme, of Liverpool, architects to the Board. The contractors were Messrs. Brown & Son, Trafford-road, Salford, and Mr. J. Anderson acted as clerk of the works. The cost of the school was 3,112*l.*, or a little under 7*l.* per head. The desks, &c., which are of the "dual" description, were provided by Messrs. Redmayne & Mays, of Sheffield.

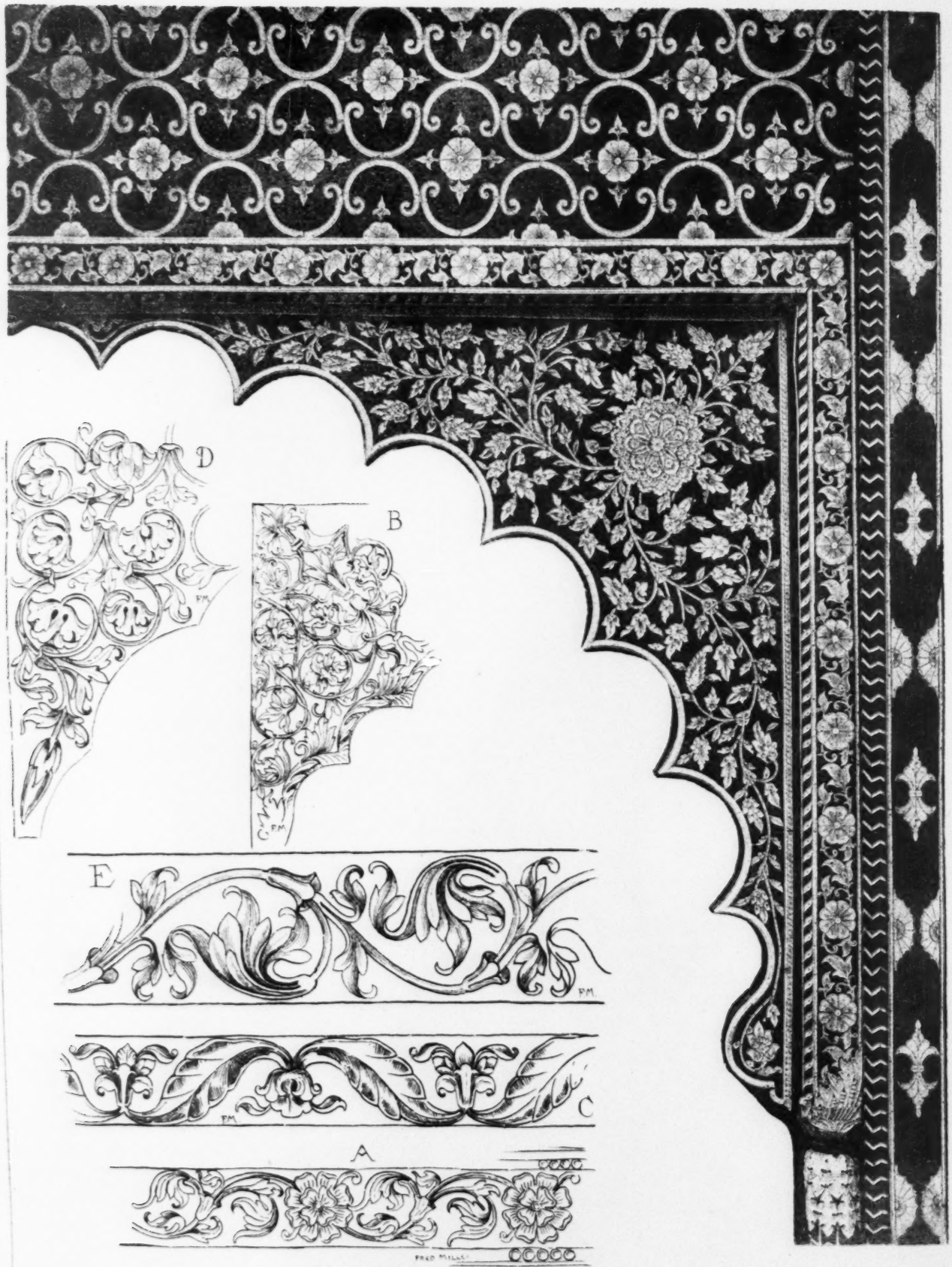


Wyman & Sons Photo-Litho

C^Queen St London.W.C.

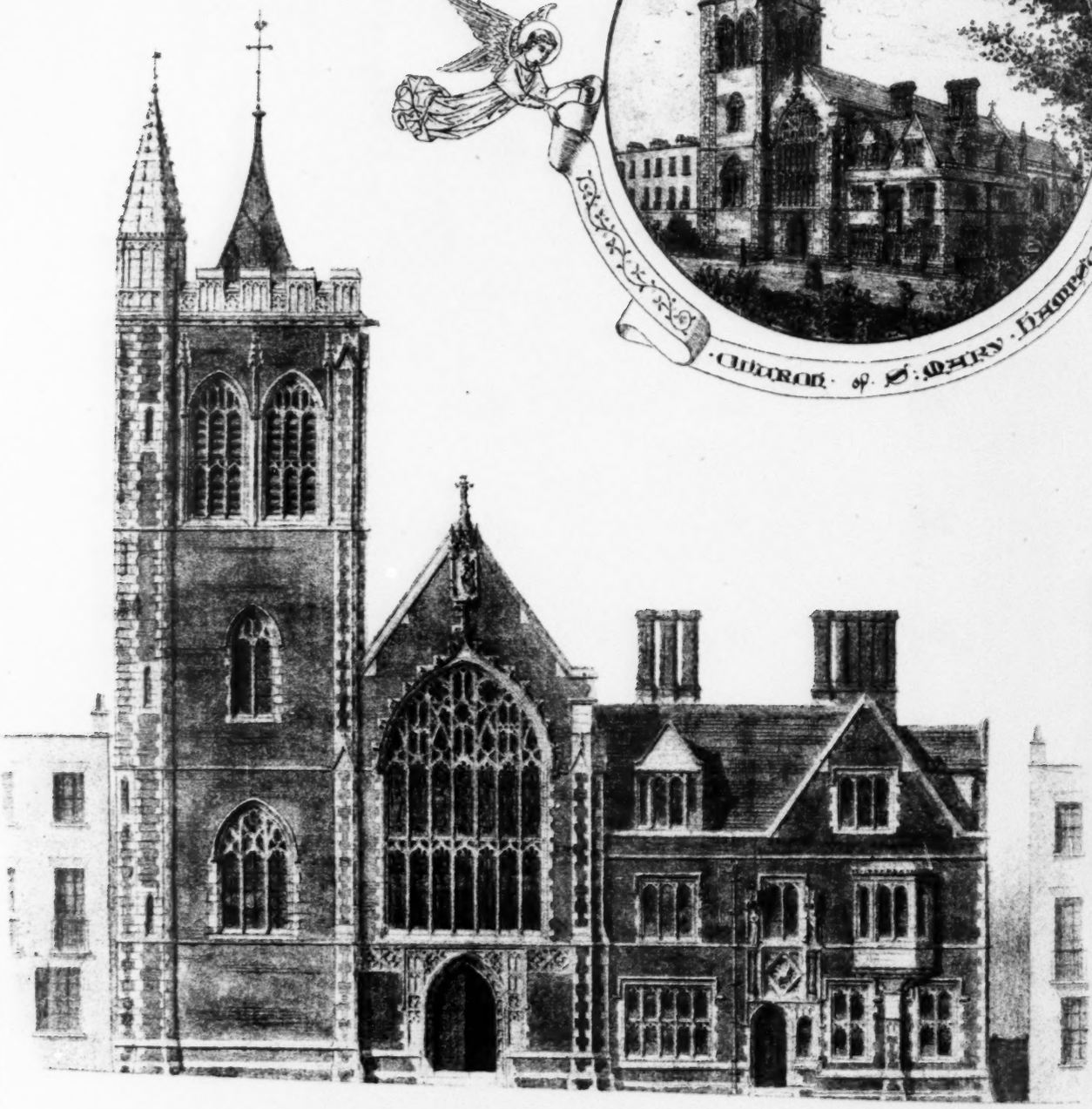
BOARD SCHOOL, RUNCORN, CHESHIRE.—Messrs. F. & G. Holme, Architects.

HALF ELEVATION OF SCREEN FROM KOTAH.



SOME DETAILS OF STONE CARVING.

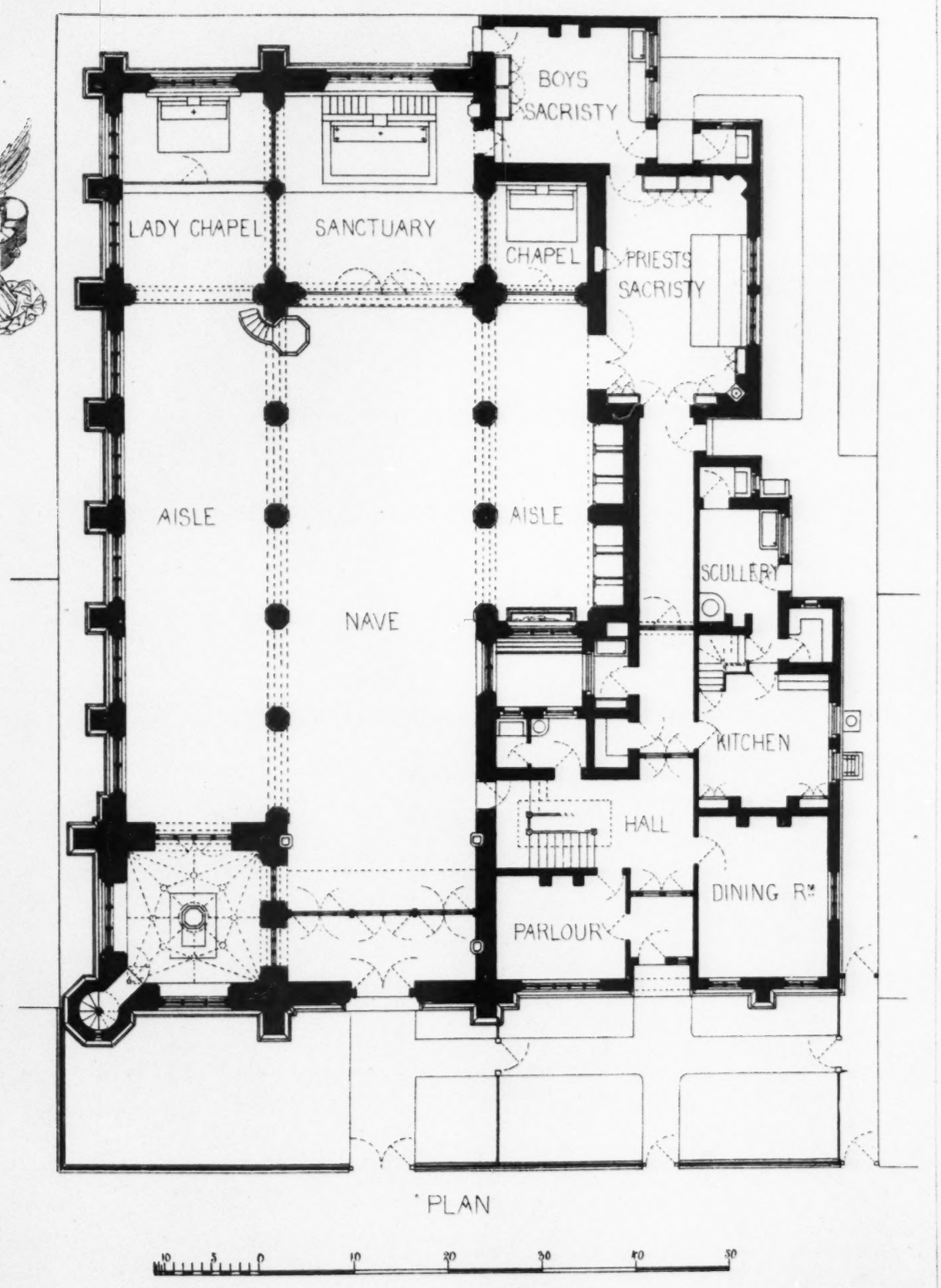
DECORATIVE WORK IN THE INDIAN EXHIBITION.



Front Elevation of Church and Presbytery

Scale 10 5 0 10 20 30 40 50 feet.

CHURCH OF ST. MARY, HAMPSTEAD.—Messrs. Goldie,



PLAN

Goldie, Child and Goldie, Architects.

Rossini dis.e inc.

Temple of Fortuna Virilis. House of Rienzi.

Roma 1819

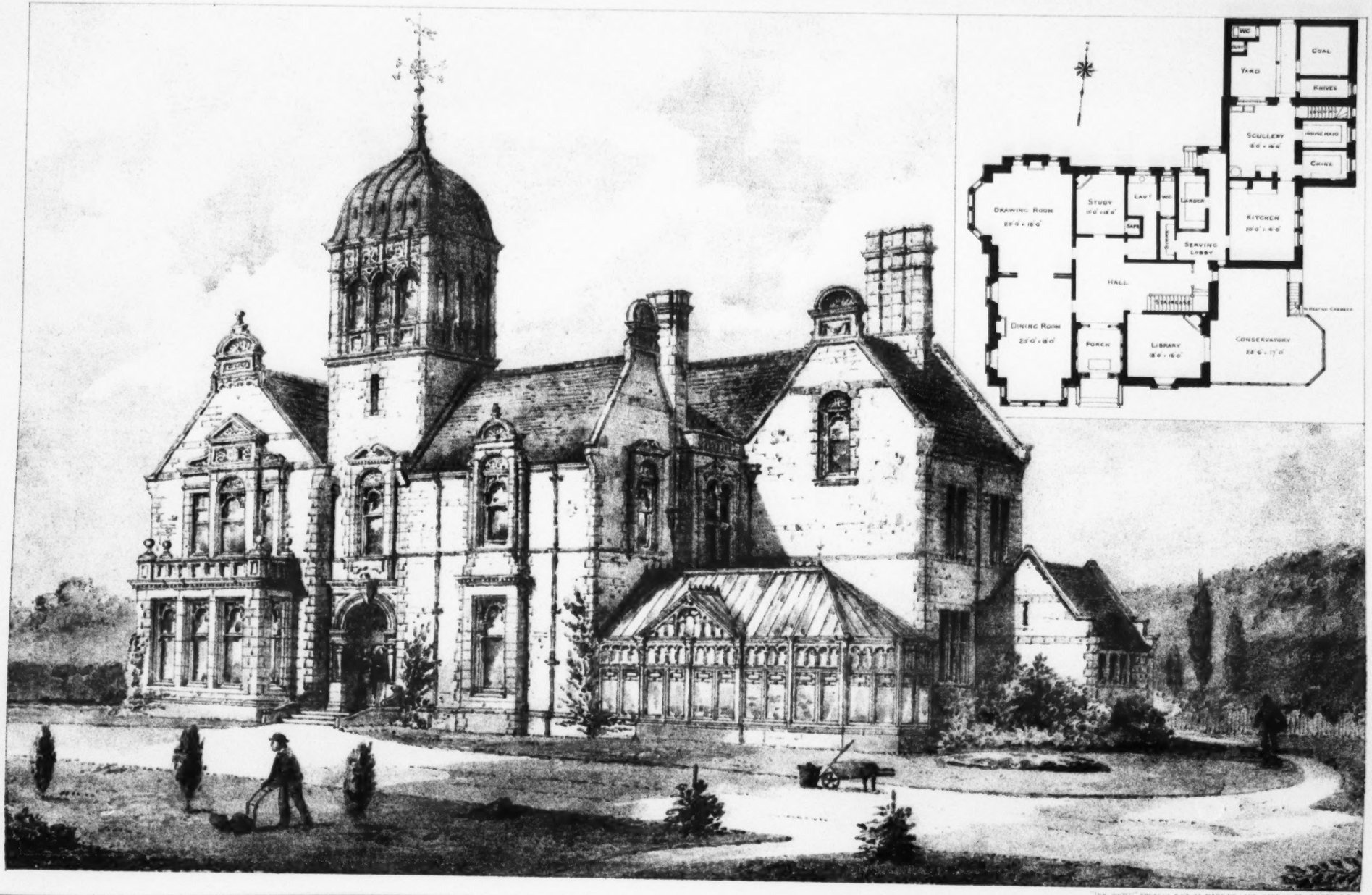
T 53

S. F. Kell Photo-Lith & Printer. 8 Castle St Holborn London E.C

INTERIOR OF THE PORTICO OF THE TEMPLE OF VESTA AT ROME.

REPRODUCED FROM AN ENGRAVING BY ROSSINI.

HOUSE, CASTLE CAREY, SOMERSET.—Mr. Chas. Bell, F.R.I.B.A., Architect.



HOUSE, CASTLE CAREY, SOMERSET.—Mr. Chas. Bell, F.R.I.B.A., Architect.

Wyman & Sons Photo-Litho

6 Queen St London WC

TRINITY PRESBYTERIAN CHURCH, WIMBLEDON.—Messrs. Potts, Sulman, & Hennings, Architects.

TRINITY PRESBYTERIAN CHURCH, WIMBLEDON.

THE site for this church is in the Mansell-road, a few minutes' walk from the station. The hall shown in the rear has just been completed by Mr. Nightingale, of Lambeth, who took the contract at 1,225*l.*, and it is proposed to proceed with the erection of vestries, class-rooms, &c., at once, before the church proper is begun. In plan the church will consist of a nave 27 ft. wide, with side aisles separated by stone arcades. There is to be an end gallery over the front porch, reached by a staircase in the tower. Materials: red brick, Broseley tiles, and Bath stone. Accommodation will be provided for about 600 people in the church, and 200 in the hall, whilst the total cost is estimated at 6,000*l.* The drawing is a reduction from a pen-and-ink perspective by Mr. Hennings (Messrs. Potts, Sulman, & Hennings, of Furnival's Inn), and is now hung in the Academy (1,615).

Sunderland Municipal Designs.—We regret that a mistake was made last week in lithographing the third premiated design for this building by Messrs. Doubleday & Caws, the small plans placed in the corner of the sheet being those belonging to the second premiated design, by Messrs. Grayson & Ould. The competition having been anonymous, there were no architects' names on the drawings, and owing to the small scale to which the plans were reduced, the discrepancy between plan and elevation escaped notice. We must apologise to both competitors.

ROTHENBURG-ON-THE-TAUBER.

THE scarcity of English names in the hotel's list of visitors must be our plea for saying a few words about this charming old Bavarian town, which differs from most others in that there is to all intents and purposes nothing modern in it. Within an easy distance of Wurzburg, it is by no means difficult of access from England. It is perched on the edge of a deep ravine, at the foot of which runs the pretty shallow stream of the Tauber, which after meandering for many miles joins the Main. Besides an unusual number of old houses well worthy of examination, and an almost perfect city wall crowned with some thirty-four towers and ten gateways, all of most varied and picturesque design, it possesses no fewer than seven churches at the present time, having originally had more, one of which was sacrificed without any apparent reason only a few years since; a portion of the sedilia from this we saw lying upside down on the side of a road. The Lutherans, who predominate there, live in amity with the Roman Catholics, and enjoy the use of the Jakobs-Kirche, the largest in the town, and which contains three very interesting triptychs, that over the high altar having fine painted and gilt figure sculptures and shutters with good gold-ground pictures. There are two towers, dissimilar in treatment, and, of course, the story of master and apprentice comes in, with the difference here that the former is said to have thrown himself in dudgeon from his own tower. A street passes under its western end. The windows over the high altar, which stands under the chord of the vault, are of very beautiful old glass. The little Frauen Kirche, standing in the valley by the side of the Tauber, which is here crossed by a most interesting and unique viaduct, has many points worthy of study, notably an ingenious circular stair, half within and half without, at its west end, by which bellringer and organist have separate means for approaching their duties without meeting each other. The little stone bell-turret, of very graceful design, encloses but does not protect the bells from weather, and is finished with the usual quaint but exaggerated finial common to so many buildings here and all over Germany. The Franziskauen Kirche is full of interesting tombs, more or less injured. The Wolfgang Kirche is also ruinous, but its traceries are very suggestive. The Johannis Kirche, in the heart of the town, seems to have been secularised in the seventeenth century. It possesses its original roundels, of pleasant tints, in the north and south windows. The cemetery church, near the railway, has a most curious west gallery, carried on a post full of the German love of quaintness and intricacy combined. The Rathhaus consists of two parts, the more ancient of the fourteenth century, and the modern of the seventeenth century. To this latter has been added a Classic colonnade, which rather assists than hurts the façade. The copper gurgoyles, eight in number, are most curious. The great chamber, the scene of Tilly's adventure with the burgesses, whose lives were saved by the draining by one by their party of a mighty "pokal" of the wine of the country, has often been described; it has a very curious ceiling, supported by beams tied up from above in an unusual manner; and the battle-pieces on the walls are worth attention. The "pokal" still remains an heirloom in the house of an old lady, the lineal descendant of the man who drained it; she showed it to us, but could not be induced to entrust it to the performers, who were on Whit Monday to personate the event for the good of the citizens. The population is at present about 7,000, but there is probably room in the town for nearly 40,000. The heraldic designs in churches and on houses are everywhere abundant and full of interest. The fountains are numerous and most picturesquely placed, besides furnishing, as they do, admirable drinking-water from the hills for the use of the inhabitants. There is also an interesting little museum of local antiquities near the Rathhaus. In the valley is the Kaiserstuhl, an isolated tower that has harboured more than one royal personage, being capable of being entirely surrounded by water in troublous times at the will of the occupant. There is also a curious relic of the Mediæval Jews in the ancient synagogue (now a granary), cemetery, and pool,—the latter, unfortunately, filled up. We may mention a curious local custom; a common sight on Fridays is the procession of the furniture and effects for the household of persons about to be married, the horses, drivers, and carriage being all decked with flowers, and the carriage conveying all sorts of *impedimenta* for both present and future uses of the family. It may be said that the quality of the architecture is eclipsed by many other cities, but what it lacks in this respect it certainly makes up in picturesqueness.

A Sketch in Penshurst.

Calshot Castle.—At the meeting of the Southampton Town Council on the 14th inst., the Town Clerk said he had been in communication with the War Office on a matter arising out of the last proceedings of the Council with regard to the contemplated removal of Calshot Castle, and the last communication, dated July 7th, he had received from the War Office was as follows:—"With reference to your letter, dated June 22nd, 1886, representing, by desire of the Mayor and Corporation of Southampton, the desirableness of retaining Calshot Castle in its present position as a landmark, and of keeping it from being surrounded by other buildings, or in any way added to or interfered with, I am directed by the Secretary of State for War to acquaint you, for the information of the Mayor and Corporation, that, considering the representations which have been made, no buildings or other works will be erected in proximity to the Castle, and the Castle will not be interfered with; and that it is not necessary to send up a deputation."

ARCHITECTURAL ASSOCIATION:

VISIT TO CHIDDINGSTONE AND PENSHURST PLACE.

THE fourth vacation visit of the Architectural Association was made on Saturday, the 17th inst., in the morning, to Chiddingstone, and in the afternoon to Penshurst. The church contains a nave, north and south aisles, west tower, and chancel, with chantry on the north side. Two windows in the south aisle, of Early English character, are the earliest remains in the church; all the other windows appear to be insertions after the fire which occurred in 1626. A good deal of Classic feeling is introduced in the detail, especially in the south porch, the doorway to which has a semicircular arch, with Classic architrave spandrels and a square Tudor label over. The tower doorway is a good example of Early Perpendicular. There are some interesting half-timber houses in the village, which also came in for study.

In the afternoon the party went to Penshurst. Mr. S. W. Kershaw was unfortunately unable to be present, as arranged; his notes were therefore read by the secretary. The hall, with the fine open-timbered roof and traceried windows; the ball-room, which is the only room left with the original dado; and the dining-room, were studied, and the numerous cabinets and pictures, for which Penshurst is famous, carefully examined. The rooms on the private side of the house were also shown, and the fine vaulted room used as a servants' hall, which is said by some to have been the chapel. From the servants' hall the party passed into the gardens, which are laid out with formal yew hedges and set beds, walks, and grass plots; and several sketches were made of the charmingly picturesque exterior. After passing through the churchyard into the village, the cottages in the village near the churchyard were sketched, the group of cottages forming the entrance to the churchyard being one of the most picturesque studies in Kent. We give a reproduction of a sketch of these by Mr. F. G. Hooper, one of the party on the occasion.

THE MARCHANT ENGINE.

THE Marchant Engine is one of the examples of the indomitable perseverance of an inventor. For very nearly twenty years, against all obstacles and with severe difficulties from pecuniary resources, experiment has succeeded experiment until at last a practical attainment is before the judgment of engineers. No doubt the professional mind, biassed by ordinary ways and common theories, is indisposed to recognise any violent novelty, and consequently resists conviction; but in every line of scientific research what has been inaccessible at one time has been surmounted at another, and, after many attempts to scale the mountain, some simple rope has been found to enable the more daring or more persistent investigator to reach the summit with success. To return the steam into the boiler after use in the cylinder has long been a dream to many, but none have hitherto succeeded. To pump dry steam is seemingly impossible, hence the failures, for as much as it is compressed so much it will expand, and the churning action is repeated. If steam be com-

pressed into water it is always ready to spring back again into steam, but if at the same time there is a portion of air its difference of gravity will not permit it to be compressed into the water; it will remain always, no matter how much pressure be applied, separate as a cushion of air above the water. This air, however, is elastic and acts as a spring; therefore as much power as is put into it will always be returned at opportunity. If now steam, water, and air be compressed together in a cylinder and the compressing force be 101 lb. on the inch, the additional 1 lb. of pressure will overcome the pressure of 100 lb. in the boiler, and the force stored up in the air-spring will open the valve and eject the steam-water into the boiler. But the air will not follow, it remains. It is thus that the value of the steam is attained at both ends, first as power in the cylinders and then as feed back into the boiler.

Some three or four years ago an experimental engine was shown at Millwall, and, although disconnected in its primitive design, it nevertheless gave good results: a superior engine of more compact construction was shown at the late Inventions Exhibition. This engine is now at Messrs. Fraser's steam boiler works at Bromley-by-Bow, where a new boiler has been specially constructed for its service, and where public tests of its capacity have recently been made, and certified by the engineers who were present. The coal was carefully weighed and its application continuously overlooked, the furnace fire being maintained in a uniform condition. The effective work on the brake was indicated by a Salter's spring: the lever acting at a distance of 12 ft. from the centre of the fly-wheel shaft, namely on a circumference of 75·38 ft. in length, the average pull of the spring balance being 345 lb., the engine running 139 revolutions. The effective work was therefore 109½ horse-power. Welsh coal, "Sorie's navigation," was used, and the quantity consumed in a two hours' trial was 110 lb. The effective power was, therefore, at the rate of half a pound (0·502 lb.) of coal per horse-power per hour. The average boiler pressure was 275 lb. per square inch, but the inventor would naturally prefer to work at higher pressures, say 500 lb. to the inch, if the engine was strong enough to withstand the wear and tear.

The vacuum in the surface condenser by the condensation of the one-third of the steam which supplies the water required for the operation was 17 inches. These results are eminently satisfactory, as might be expected from an engine which professedly embodies the solution of the important problem of returning to the boiler the latent heat of the steam which otherwise is wasted. An economy of 80 per cent. in fuel is claimed as the practical result. Another very great advantage must accrue from this system, namely, constantly clean boilers; for, as the same water is used over and over again, the residuum cannot be greater than the solid matter in the original water with which the boiler was filled, plus that in the few gallons of water required to make up for leakage. Practically, distilled water is continuously used: and those who have had boilers to deal with well know the vexations and damages caused by incrustations. A syndicate has been formed for carrying the invention commercially, and has its offices in John-street, Bedford-row; and Messrs. Blyth, Harper, & Co., of Mile-end have acquired a licence for manufacturing, and will shortly have at work a 5-h.p. horizontal engine, which is intended to demonstrate the adaptability of the system to engines of small power. Ten-horse power is usually spoken of as the replacement of the ordinary 1 h.p. could perfect caloric action be accomplished. The return of all the latent heat cannot, however, be effected, but the return of two-thirds is now being demonstrated, for which an economy of six times the work obtainable from any water feed is claimed.

Lectern, Loughborough.—Messrs. Thos. Potter & Sons, of Oxford-street and South Molton-street, have just made and placed in All Saints' Church, Loughborough, a brass eagle lectern. The base and pillar are circular but massive, and the eagle is modelled from nature. The base is supported by three lions, also modelled from nature. The lectern is a gift to the church in memory of the Rev. Henry Fearon, late Archdeacon of Leicester, and Rector of the parish, and an inscription is engraved on the base to that effect.

THE TIRYNS CONTROVERSY.

SIR,—I have just received a copy of the *Builder* of July 10th, and as in it I find an editorial allusion to the Tiryns controversy which recognises on my part some "personal feeling," and as in it I see Dr. Dörpfeld's paper for the first time, I beg that you will allow me space for a statement of my position. I have never seen Dr. Schliemann but once in my life, and had no other intercourse with him then than passing the compliments of the evening Dr. Dörpfeld I have never seen or had any kind of question with until the present arose, nor have I ever had any cause for personal feeling against either, nor has any such feeling ever arisen. As to Dr. Dörpfeld's invitation to visit Tiryns in his letter to the *Times*, I have only to say that I was a thousand miles from Greece when it appeared, and that nothing prevented Dr. Dörpfeld from writing me personally while we were both in Athens, as everybody in the city knew where I was to be found, and a note would have found me and received a reply at once.

I am free to confess that I do not regard Dr. Schliemann's manner of treating his subjects as scientific, and the facility with which Dr. Dörpfeld adopted his Trojan conclusions and which recognised a brick building as the city of Priam, persuaded me (and in this persuasion "Tiryns" confirms me) that Dr. Dörpfeld, though an accomplished architect, was not a sound archæologist, and that his observation of archaic and pre-historic work was altogether too limited to permit him to assume any authority in the matter. His reply to Mr. Penrose at the Hellenic Society (or to me if only so intended) establishes my conviction still more firmly. He states that I, in a letter, declared the "buildings at Tiryns" to have been "constructed in the Macedonian time by a Celtic tribe," but that in a second letter I had "corrected myself and declared the Palace of Tiryns to be Byzantine." This is utterly false and shows that he does not examine his premises with scientific discretion and exactitude, as he makes an accusation against me which he could have seen to be without foundation if he had examined my statement of the matter. All that I had said in my first letter with regard to the epoch of the "Palace of Tiryns" is this: "Mr. Penrose had no hesitation in declaring them later than the Macedonian invasion."

The question is enveloped in many words by Drs. Schliemann and Dörpfeld, but it is in reality very simple. They assume the ruins which they cleared up to be of the period of the foundation of Tiryns, or near that age. Now, if anything can be decided as to the foundation of Tiryns it is that it belongs to the period of Pelasgic domination in the Peloponnesus. It coincides in its most ancient parts with the work which is known as Pelasgic in Italy, the Ionian Isles, Crete, and the greater part of Greece, in all technical characteristics. In all the ruins which are determinable as of this archaic period we find no evidence of cutting tools or of the saw, and so far as tradition goes we have no right to assume that they were known, for Euripides tells us that the walls of Mycenæ were built with the measuring line and stone-axe, while we have the introduction of the stone-saw distinctly recorded as a novelty within the historic period of Greece. But there is good reason in the Egyptian records, taken with the *ensemble* of Greek tradition, for saying that this Pelasgic period and dynasty to which we owe the walls and foundations of Mycenæ and Tiryns cannot have been later than 1500 B.C., and may have been much earlier, and in the numerous remains of this period in Italy and the islands where the Pelasgic empire appears to have sunk without developing into a succeeding civilisation, there is nowhere a sign of cut stone, sawn stone, or the drill used at Tiryns, while in the localities where the civic life was not interrupted, but invaders seem to have been absorbed by the invaded, as was the case in the Peloponnesus and other parts of Greece, the ancient buildings were kept in use, added to, repaired, and copied, as was the case at Mycenæ, Orchomenos, and numerous other localities in Greece. Yet Dr. Dörpfeld seeks to prove by the occurrence of the tubular drill and stone-saw in the ruins of Mycenæ, which was an uninterruptedly inhabited city from its foundation to 468 B.C., that the stone-saw and tubular drill were coeval with the foundation of Tiryns! He says that "the well-known building of the heroic age, the Lion's Gate, and the dome-shaped sepulchres of Mycenæ, &c., have nearly all been worked with the stone-saw, &c." But this is precisely the point I dispute, and which Dr. Dörpfeld misstates. The original dome-shaped tomb in its entire construction does not show the stone-saw, but in the façade, which has evidently been added, and is in no way engaged in the original work, the stone-saw is used, as in the second tomb, which is as clearly a later work and an imitation. I maintain (and I have probably made examination of more prehistoric ruins of the Pelasgic and other periods than Dr. Dörpfeld, from Fiesole to Crete) that in no ruin of a pre-Homeric age, much less of the Pelasgic, can the mark of a stone-saw, or any such ruin as that at Tiryns, be found. If we want house-walls of the Pelasgic period, we have traces of some at Ætos in Ithaca; if of the later and heroic time, we shall find them in Crete, notably at Olus. Dr. Dörpfeld quotes as proofs of his contention, Eleusis, Olympia, Athens, and Troy, as well as Mycenæ and Tiryns; but as to the former cities, there is no pretension that they were contemporary in construction with the walls of Tiryns. The custom in Egypt and Mesopotamia proves nothing, for we have not the least indication that there was any intercourse with Egypt much before the time of Sesostris, and the introduction of letters into Greece probably marks the introduction of Mesopotamian invention. Mortar never is found in any Pelasgic work, but in Olus the cement used for lining cisterns is found, but is not found in the walls of house or city. Dr. Dörpfeld talks of clay-mortar in the outer wall of Tiryns. This is not the fact. Clay, had it ever been there, would have washed out in a single winter's rains.

There is no such complication as Dr. Dörpfeld would make. If in any unquestionable pre-historic city in Greece or Italy not in habitation since the archaic period, he can find walls of quarry stone bonded with clay bricks, baked or unbaked, and stones cut with the saw similar to those at Tiryns, and mortar, he will have a right to refer to them as arguments, and I will yield the point. So far no such case is known, and if we are to build archæological science, we must do so on known facts and not hypotheses. Both Dr. Schliemann and Dr. Dörpfeld instance a great conflagration which has baked bricks and burned lime, and so accounted for what we saw, though Dr. Dörpfeld denies the bricks; but those who have seen either lime or brick kilns, and remember the prolonged and intense heat required to calcine lime or bake a brick, will hardly believe that such a fire would have left the freshly-sawn faces and fractures of the "parastades," and the alabaster frieze uncalcined, and painted stucco in condition to be transported to the Museum of Athens.

I have no intention to ask you to give me room for a refutation of Dr. Dörpfeld's long paper, but I must distinctly protest in the interests of archæological science against the line of argument followed by him. We wish to establish a canon of mural construction by which to determine the age of a given wall. He attempts to confuse all determinations by assuming the antiquity of certain things and then using them as proofs of the antiquity of other disturbed things. What right has he to assume that "kyanos" means blue Egyptian glass? And this assumption, which would destroy his own case, is the basis of our argument! So far from admitting, as Dr. Dörpfeld claims, that "the technical evidences adduced by him are overwhelming and that they rest on sure foundation," I am ready to show that some are utterly fallacious and the others very questionable, and this I hope to do at some future time and in another place, and meanwhile I protest against the hypothesis of "personal" feeling or any motive other than scientific.

W. J. STILLMAN.

Rome, July 18th.

Wednesfield.—The memorial stones of a new Wesleyan Chapel in High-street, Wednesfield, were laid on Monday last. The style of the new building will be Decorated Gothic; the materials used will be pressed bricks, with Bath stone dressings, and pitch-pine timber, plain and varnished. The roof will be open-timbered. The building will accommodate 400 persons. Mr. C. Bell, of London, is the architect; and Mr. W. Moss, of Stafford, the builder. The cost of the building, including the site, is estimated at about 1,700*l*.

THE KENT ARCHÆOLOGICAL SOCIETY AT ROCHESTER.

A CLOUDLESS sky and brilliant sunshine helped to welcome the members of the Kent Archæological Society on their arrival at Rochester on the 21st of July. Flags of welcome were spread across the High-street, and the members assembled in goodly numbers, the place of meeting being an attractive one, and the programme offering an abundance of antiquarian treasures for inspection. After some routine business at the Guildhall, which was thrown open for the reception of the members, Mr. St. John Hope briefly described a large map of the city which he had prepared, on which was shown the course of the ancient walls which once enclosed it. A start was then made for the ruins of the Bridge Chapel dedicated to the Holy Trinity. The visitors found that this ancient building had been cleared of the modern walls and offices which until recently prevented its inspection. It now stands to view as a roofless ruin attached to the new Bridge Chamber recently constructed. The chapel was dedicated to the Holy Trinity, and stood at the foot of the mediæval bridge across the Medway, a building only recently removed. It is of late fourteenth-century work, having square-headed windows at the entrance and two piscinæ on the south side. When so many ancient buildings have been allowed to decay or have been demolished it is a matter of much congratulation that so much care has been taken to preserve this interesting little ruin.

After a brief inspection of the new Bridge Chamber, opposite which the parapet of the wall in front of the Medway has the balusters of the old bridge, a perambulation of the city walls was commenced. The site of the poorly endowed church of St. Clement, closed in Henry VIII.'s time, was passed, and many a visit was made by the large party into the little cottages and houses on the line of the old wall to inspect fragments of it which still remain. The quaint old school close to the site of East Gate, founded by Sir Joseph Williamson, an irregular building of red brick in the Queen Anne style, was entered, and the party proceeded to inspect a fine bastion of the wall attached to a portion of the wall itself which here has some fine bold battlements forming the parapet of the path on the wall itself here in perfect condition. The old school, doubtless, from having been built on the site filled up of the city ditch, is twisted and bent in a curious manner. The fine old Elizabethan house Eastgate House, in the High-street, was then inspected, the party filling the building in every floor. The fine chimneypieces and enriched ceiling in one of the rooms were examined by as many as could enter the rooms containing them, the remainder had to be content with the view of the singularly irregular outline of the exterior. It is now used as a workmen's club. The house, Nos. 142–4, High-street, are similar in style, and, being close to Eastgate House, the grouping of the quaint gables presents an interesting street view hardly to be excelled in England. Progress was then made for Restoration House. This well-known Elizabethan house was thrown open for the inspection of the party, and the building and its contents were greatly admired. The walls are of red brick, mantled with ivy, and the tapestry presented by Charles II. is still preserved. In the room in which the king slept on his progress to London at the time of his restoration, the present owner, Mr. Stephen Aveling, has painted a frieze of panels illustrating the story of Geraint and Enid. They appear as if covered with glass, but the effect has been produced by the application of about twenty coats of old varnish, which has not cracked or become discoloured. A shaft communicating with the top of the house, and also with the basement, opens from an angle of this room. It leads to a subterranean passage, which has been traced for a long distance. It is too small for a staircase, but a fugitive could have been lowered by a rope.*

The Cathedral was then inspected, but before this was done Mr. St. John Hope explained on a large plan the many singular alterations and additions that have been made to the structure from the time of Bishop Gundulph, who, on coming to the see, commenced the present building about 1080. Mr. Hope rendered a somewhat lengthy description of the dates of the various parts, referring to the plan as he proceeded. He then referred to documentary history, and concluded by indicating the places of sepulture of the various bishops of the see. In the perambulation of the building, the curious ruined tower on the north side of the cathedral was carefully inspected. It is a detached building, erected in the plainest and earliest style of Norman work in England, remarkable for having been always detached, and not opening into transepts as at Exeter. It appears to have been erected before the demolition of the Saxon Church by Gundulph. Many Roman bricks are built up into its walls.

The further notes of the perambulation, together with the dates assigned to the various portions, will be referred to in our next.

* For views of front elevation of Restoration House and chimney-piece and staircase thereat, also for plan of the house, see *Builder*, August 22 of last year.

THE BUILDERS' ACCIDENT INSURANCE (LIMITED).

THE fifth annual general meeting of this Company was held at the Registered Offices, 31 and 32, Bedford-street, Strand, on the 7th instant, Mr. Stanley G. Bird in the chair. The report of the directors and statement of accounts for the year ending the 31st May, 1886, were presented to the meeting.

The report was as follows:—

"In presenting their fifth annual report the directors have great satisfaction in stating that the company is in a sounder financial position than it has ever been in, in spite of the large number of accidents which they have had to deal with and the continued depression in trade.

The directors have in the course of the year had under consideration no less than 356 accidents, and they have thought it right to contest liability in ten cases, in seven of which they have been successful.

In the case of one accident, involving injuries to five workmen, the company were unsuccessful, and the amounts payable in this case, in addition to the consequent costs, constitute 1,183*l.* of the total of 3,281*l.* paid during the year.

The sum reserved in last year's accounts has not been affected by the claims, and the company have at the present time a larger amount in hand than last year, with an estimated liability considerably less.

The directors regret that there has not been that increase in the business which the northern committee expected would accrue from extending the company's policy to cover sub-contractors' workmen without any increased premium; but, notwithstanding this, and although there has been a falling off in the ordinary premiums, it has been more than counterbalanced by the additional premiums received for the risk to the public.

The accounts show that after reserving 2,023*l.* for unsettled claims and unexpired risks, their remains a sum of 1,200*l.* for future bonus to be paid to members of the past year on renewal of their insurance, and to meet other known liabilities.

It has been considered advisable to discontinue the working of the Bristol District Agency as a separate branch.

During the past session of Parliament two Bills to amend the Employers' Liability Act, introduced into the House of Commons, were referred to a select committee. The chairman gave evidence before that committee, and they have now made a report to the House which recommends that 'with certain amendments the Act should be renewed and made permanent.' Should any legislation embodying its terms be introduced into Parliament it will have the careful attention of your Board.

The following six directors retire from the Board, in accordance with the Articles of Association, viz., Messrs. Thos. Barnsley, J. T. Chappell, J. Howard Colls, Robert Dennett, Jas. Greenwood, and J. H. Marsden, all of whom are eligible and offer themselves for re-election."

The Chairman.—In presenting the report of the directors for the past year I may say that we do so with mingled feelings of regret and satisfaction,—of regret that the business has not increased to the extent we were led to hope might result from the issue of the new form of policy covering the risks for personal injuries caused to or by the workmen in the service of the insured, by or to sub-contractor's workmen engaged with them, as defined in the Company's policies. And we also hoped that as the Company became better known our business would have increased, but the general depression has had such a disastrous effect upon the building trade that it has been reflected upon this Company. When I tell you that over 10 per cent. of the premium received has been returned for unexpended wages, it is a sure criterion of the great depression in trade. As every care is taken by the secretary in obtaining these returns, you may be quite satisfied that the insurers are fully justified in asking for this *bonâ fide* rebate off the amount that has been paid for premium during the past year. Still, I think we ought to be thoroughly satisfied that we have been able to hold our own, and have a balance in hand notwithstanding these bad times and the exceptionally large amount that the company has had to pay for compensation and law costs. Due allowance has been made for any claims that may be made upon us either in the way of debts or liabilities. At present we only insure our own trade and those trades connected with building, and do not go into other trades, where probably there might not be so many risks, and which would, therefore, be more profitable. The building trade is usually looked upon as a risky one. We know when we insure our own lives that we all have to pay extra premium; therefore I think that when we show that this company can insure its members at equally low rates to those charged by other companies we may congratulate ourselves. As you will notice in the report we propose to pay a bonus of 10 per cent.; if you agree to pass a resolution to that effect it will bring the rate of premium that we charge on renewal to about the minimum rate charged by other companies. Considering the mutual character of this company, and the short time it has been in existence, and the great cost of working a new company, I think we may consider this a source of satisfaction. You will see by the report that during the past session two Bills were introduced into Parliament for amending the Employers' Liability Act, and at the request of the Board of this Company and the Councils of the Institute of Builders, and the National Association, Mr. W. H. Cowlin and myself gave evidence before the Select Committee of the House of Commons. Certain provisions we did not oppose,—in fact, some of them we did not think at all objectionable; we, however, opposed the Bills, but I think the result will be that the Act will be made permanent with certain amendments, but it is quite clear from the tone of the report that has been made that those amendments will not be in favour of the builder. I think, therefore, you should take the matter into consideration, and the chances being that the risks run will be very much intensified, it behoves all members to support their own company by bringing to the notice of their brother builders the great risks they run and advise them to insure with this company, especially pointing out that it is a strictly mutual company and that any profit will be returned to insurers. I beg to move that the report and balance-sheet as audited and presented to the meeting be adopted.

The motion, having been seconded by Mr. F. J. Dove, was carried unanimously.

It was moved by Mr. H. H. Bartlett, seconded by Mr. Thomas Patrick, and resolved:—

"That a bonus of 10 per cent. upon last year's premiums be paid in the form of rebate to such members as renew their insurances, and that in cases where insurances have already been renewed since the 31st of May, 1886, the bonus be forthwith paid."

It was next moved by Mr. Wm. Densham, seconded by Mr. J. Franks, and resolved:—

"That the sum of five hundred pounds be apportioned for the remuneration of the directors for their services during the past year."

It was moved by Mr. Thos. Patrick, seconded by Mr. J. S. Jones, and resolved:—

"That the following six directors, who retire under the Articles of Association, and have signified their willingness to stand, be and they are hereby re-elected, viz.:—Mr. Thos. Barnsley, Mr. J. T. Chappell, Mr. J. Howard Colls, Mr. Robert Dennett, Mr. James Greenwood, and Mr. J. H. Marsden."

It was moved by Mr. Thos. Patrick, seconded by Mr. Wm. Southern, and resolved:—

"That Mr. Charles Fox be and he is hereby re-appointed auditor."

Finally, it was moved by Mr. F. J. Dove, seconded by Mr. Thos. Patrick, and resolved:—

"That the thanks of the meeting be tendered to the chairman for his able services during the past year, and in presiding over this meeting."

BUILDERS' BENEVOLENT INSTITUTION.

THE thirty-ninth annual meeting of this Institution was held on Thursday afternoon last at Willis's Rooms, St. James's, Mr. George Plucknett, J.P., Treasurer, in the chair.

Major Brutton, the Secretary, read the annual report, which stated that the charity was pursuing its onward course and extending its usefulness, as from year to year more persons were compelled to seek the benefit of the income arising from it to support them in old age and misfortune. There were now thirty-six male and thirty-one female pensioners; five had died during the past year, and seven others had been elected. New subscribers were greatly needed, for since the widows of deceased pensioners had been placed on the funds of the Institution without election, and new applications had been admitted, the number of pensioners had gradually increased to the present total of sixty-seven, so that it required a considerable sum to be raised annually to

sustain them. The supporters of the charity were much pleased by the action of the Worshipful Company of Carpenters in placing their fine hall at the service of the Institution for the last annual dinner, as well as for their generous donation, and the Institution was greatly indebted to Mr. Arthur C. Lucas, J.P., for presiding on that occasion.

The report and accounts were adopted, on the motion of the Chairman, seconded by Mr. Thomas Stirling.

Votes of thanks were passed to the President for the past year (Mr. Arthur C. Lucas, J.P.), to the Vice-Presidents, to the Trustees (Mr. George Plucknett, J.P., Sir James C. Lawrence, Bart., Sir S. Morton Peto, Bart., and Mr. C. T. Lucas), and to the Treasurer (Mr. George Plucknett, who was again re-elected).

Votes of thanks were also accorded to the Committee, the retiring members of which were re-appointed, and Messrs. G. Williams, J. Lough, and C. Ansell added to their number; a similar compliment being paid to the auditors (Messrs. Ward, Bolding, and Duffield).

The Chairman proposed as President for the ensuing year Mr. Basil E. Peto, a son of Sir Morton Peto, Bart., adding that it was most satisfactory to find the sons following in their fathers' footsteps.

On the motion of Mr. Thomas Stirling, a hearty vote of thanks was passed to the chairman, who, in replying, dwelt upon the necessity of gaining subscribers among a large body of the trade who at present did little or nothing to help the Institution.

COMPETITIONS.

The East London Hospital for Children, Shadwell. — We hear that, with reference to the competition for the extension of this hospital, the Board has passed the following resolution :—

"That they consider the plans of 'Sunshine' the best of those submitted to them, and recommend that the authors be so informed; but that, as some alterations will be necessary, they may be required to make a new design to meet them; this, however, the Board should not bind themselves to accept."

The design "Sunshine" is by Mr. W. J. N. Millard and Mr. W. G. B. Lewis, who will, doubtless, be willing to make any reasonable alterations in it to meet the views of the Board, but it will be manifestly unfair if they are asked to do so without an assurance that they will be employed to carry out the work.

Plymouth Lunatic Asylum.—Fifteen designs have been sent in in this competition, and the Borough Justices have called in the assistance of Mr. C. H. Howell, the Consulting Architect to the Commissioners in Lunacy, to act as their professional adviser and assessor in the selection of the plans.

Proposed Town-hall, Stourbridge.—A special meeting of the Stourbridge Commissioners was held on the 16th inst. to receive a report of the committee appointed to confer with the Donors' Committee of the proposed Town-hall scheme. Mr. W. J. Turney presided. The report of the committee was read by Mr. C. H. Collis. This stated that instructions had been given to three local architects,—Messrs. T. Grazebrook, T. Robinson, and J. M. Gettings,—to prepare plans for a new Town-hall on either of the two sites, viz., that of the present Corn Exchange, or the south-west angle of the present Market-hall building. The Donors' Committee were prepared to spend 3,500*l.* in the erection of the Town-hall, to include architect's fees, heating, lighting, and other convenience excepting seating, the architect's charges not to exceed 5 per cent. on the outlay. The conditions requested to be observed were that the Town-hall should be capable of seating not less than 800 and not more than 1,000, exclusive of stage, and including the gallery; the stage to be at least 20 ft., but not more than 23 ft. deep from the footlights to the back, space to be reserved at the back for the stage organ, one small and two large rooms for artistes at the rear of the stage, and ladies' cloak-room at the main entrance. The Committee now stated they were of opinion that further instructions should be given to the architects by the Board that it was contemplated or thought desirable to utilise the buildings to the best advantage by providing, in addition to the public hall, which should be the first consideration, the following buildings :—Corn Exchange, which might be utilised for a drill hall, suite of offices, board-room, and fire-brigade station. If the architects were restricted the probability was that the plans would be unsatisfactory; but if the architects were allowed to deal with the whole site better results would be likely to be attained at a less expense. The committee, therefore, recommended the Board to invite the same architects to submit plans for the buildings named jointly with the public hall, and that the sub-committee be empowered to draw up the necessary instructions, with any restrictions that they might think were required. A lengthy discussion resulted in the report being simply received, and it was understood that before any decisive action was taken in regard to the matter due intimation would be given to the Commissioners.

OBITUARY.

Mr. David Stevenson, C.E., F.R.S. — The death took place, on Saturday last, at North Berwick, of Mr. David Stevenson, the well-known civil engineer. According to the *Scotsman*, he was the senior member of the firm of D. & T. Stevenson, engineers to the Board of Northern Lighthouses, and the Fishery Board of Scotland for harbours. He has been practically laid aside from work during the past three years. Mr. Stevenson was the third son of the late Mr. Robert Stevenson, the engineer of the Bell Rock lighthouse, and was born at Edinburgh in January, 1815. Educated at the High School and University of Edinburgh, he, unlike his brother Alan, who was originally destined for the Church, elected from the first to follow his father's profession. Before entering on his apprenticeship, he was for some time in the workshops of one of the best practical millwright engineers of his day, where he acquired manipulative skill and the proper methods of working in different materials,—a course he always advocated for those who intended to follow the profession of civil engineering. After serving a regular pupilage as a civil engineer, he was for some time engaged with Mr. Mackenzie, contractor on the Liverpool and Manchester Railway, and he gave a description of this important railway scheme to the Society of Arts more than fifty years ago, and was awarded their medal for his exposition. He then returned to Edinburgh, and, in conjunction with his father and his brother Alan, began practice as an engineer. During the year 1837 he made a three months' tour in Canada and the United States, the result of the inspection of the engineering works of those countries being published in a volume under the title of "Sketch of the Civil Engineering of North America," which was subsequently republished as one of Weale's Series of Engineering Works, as peculiarly applicable to new countries where engineering works on an extensive scale, in which timber forms a chief element, would yet be in full operation. Along with his brother, his advice was much sought in regard to the improvement of rivers and harbour and dock works. There are, indeed, very few rivers or harbours in Scotland with which he was not in some way professionally connected. His practice was not, however, confined to Scotland, and he was called on to report on the improvement of the rivers Dee, Lune, Ribble, and Wear in England, the Erne and Foyle in Ireland, while the Forth, Tay, and Nith were improved under his advice, and extensive works are now in progress on the estuary of the Clyde from the designs of the firm. His book on "Canal and River Engineering," giving the results of his experience in the treatment of rivers, will long remain a standard work on the subject of which it treats. Originally written at the request of his old friend, Mr. Adam Black, about thirty years ago, for the "Encyclopædia Britannica," it was shortly afterwards published as a separate treatise, and it is now in its third edition. In 1853, Mr. Stevenson succeeded his brother Alan as Engineer to the Northern Lighthouse Board, and, along with his brother Thomas, he designed and executed no fewer than thirty lighthouses, two of which,—on Dhuheartach and the Chicken Rock,—are triumphs of engineering. In addition to the Scottish lighthouses, the advice of the deceased's firm was taken by the Governments of India, New Zealand, Japan, and Newfoundland on lighthouse matters, and under their direction schemes for the lighting of the whole coasts of Japan and New Zealand were matured and are now being carried out. In connection with the lighting of the coasts of Japan, where earthquakes are frequent, Mr. Stevenson devised the aseismatic arrangement to mitigate the effects of earthquake shocks on the somewhat delicate optical apparatus used in lighthouses. It may also be mentioned that his firm designed and carried out the Edinburgh and Leith sewerage scheme, and the widening of the North Bridge. In addition to many papers, principally on engineering and cognate subjects, read before different societies, Mr. Stevenson found time, amid the exacting calls of his profession, to write several books which have taken a permanent place in engineering literature, such as "The Application of Marine Surveying and Hydrometry to the Practice of Civil Engineering," "Reclamation and Protection of Agricultural Land," "The Principles and Practice of Canal and River Engineering." He also wrote several articles for the last and present edition of the "Encyclopædia Britannica," among which may be noted "Canal," "Cofferdam," "Diving," and "Dredging." He was also author of the "Life of Robert Stevenson," published in 1878. Mr. Stevenson was elected a Fellow of the Royal Society in 1844, and he subsequently acted as a member of Council and one of its Vice-Presidents. He was a member of the Council of the Institution of Civil Engineers. Mr. Stevenson leaves a family of two sons and four daughters.

Mr. A. C. Earp.—We regret to announce the death, at the early age of 31, and after a painful illness of some months' duration, of Mr. Arthur Clifford Earp, son of Mr. Thomas Earp, and partner in the well-known firm of Earp, Son, & Hobbs, architectural sculptors, London and Manchester. The interment took place at Nunhead Cemetery on Thursday, the 15th inst., when a number of carvers and masons in the employ of the firm attended and bore the body to its last resting place.

ARCHÆOLOGICAL SOCIETIES.

Bradford Antiquarian Society.—On the 10th inst., about fifty members and friends of the Bradford Historical and Antiquarian Society had an excursion to Bolton Abbey. After tea, the party visited Beamsley Hospital, a quaint pile of buildings on the Harrogate-road, built in 1592.

Royal Archæological Institute.—The annual Congress of the Royal Archæological Institute of Great Britain and Ireland is to be held this year at Chester, and the period fixed is from August 10th to 17th, the Congress being under the presidency of the Duke of Westminster, Lord Lieutenant of Cheshire. The programme of places to be visited during the sitting of the Congress includes Llangollen, Valle Crucis Abbey, Malpas Church, Chirk Castle, Wrexham Church, Offa's Dyke, Beeston Castle, Delamere Forest, Roman roads and entrenchments, Kelsbarrow, &c. Of course the restored cathedral at Chester, the town wall, and "the Rows" will form objects of interest to visitors during their stay. The Historical Section will be presided over by Mr. E. A. Freeman, who will deliver the opening address in that section on the first evening; the Bishop of Chester opens the Antiquarian Section on the second; and the Right Hon. A. J. B. Beresford Hope the Architectural Section on Thursday evening, the 12th.

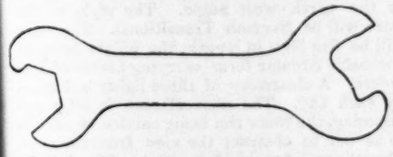
Somerset Archæological Society.—The annual meeting of the Somersetshire Archæological and Natural History Society will be held on August 3rd, 4th, and 5th, under the presidency of Mr. John Batten. The general meeting will be held at Yeovil on Tuesday, August 3rd. After the chief places of interest in the town have been visited, luncheon will be partaken of, at the invitation of the President, at Aldon. In the evening a meeting will be held at the Town Hall, where several papers will be read. Round-hill Camp and the Frying Pan are down on the programme for inspection on Wednesday, the second day, with Stoke-sub-Hamdon Church and Montacute House. On Thursday the church and Mediæval house at Martock will be visited, together with the church and Manor House at Tintinhull, where luncheon will be provided. Limington Church, Ashington Church, and Mudford Church also appear upon the programme for the concluding day.

Surrey Archæological Society.—The annual excursion of this society will take place on Wednesday, the 28th inst., to Guildford, Tangley Old Manor House, St. Martha's, and Titing, under the presidency of Mr. John Mason, Mayor of Guildford. The first meeting-place

will be the Royal Grammar School, Guildford, at 1·15 p.m., where Mr. D. Maclure Stevens will read a paper entitled "The Royal Grammar School, its Founders and History." The Castle, St. Mary's Church, Trinity Church, Mr. Bull's old house in High-street, Abbott's Hospital, the crypt under the Angel Hotel, and the crypt under the house opposite, will next be visited. Carriages will then convey the company to Shalford Mill House, which will be described by Mr. Ralph Nevill, F.S.A., thence the party will proceed to the old Manor House at Tangley,* where the proprietor, Mr. Wickham Flower, will read a paper on the same; thence to St. Martha's, where Mr. H. F. Napper will offer some remarks on the Roman roads of the neighbourhood. From St. Martha's the company will return (*vid* Titing) to Guildford Public Hall, to a collation at six p.m. This will be the third time the Society has visited Guildford since its formation, and we are not surprised, from the fact of its being the county town and its containing so many objects of interest in and around it, that it should be a favourite *rendezvous* of the Society. For the benefit of the younger members who may have never visited the town, but intend to go, we would call their attention to a leading article published in the *Builder* of July 14th, 1855, entitled, "A Trip to Guildford."

A NEW SPANNER.

THE object of this spanner, of the form of which we give an outline, is "to screw up or unscrew nuts, bolts, wood screws, &c., by a regular backward and forward motion, and to self-adjust itself on every square." It will be seen from the shape of the jaws how it is intended to act; the small jaw at the right-hand



end clips the angle of the bolt-head, and on moving the spanner backward the larger one slips round and the spanner is ready for another clip. The left-hand end acts in the same manner, the jaw with the return forming the clip. It is patented by Mr. Caleb Smith, jun., of Liverpool.

A QUESTION OF TRADE MARK: "MONKS' PARK" STONE.

SUMSION *v.* PICTOR AND SONS.

THIS case has been again before the Chancery Division upon an application by the plaintiff for an order to discontinue the action.

The plaintiff in the action, Mr. Isaac Sumsion, carries on business at Bath as a stone merchant, and the defendants are Messrs. Pictor & Sons, Bath stone merchants, Box, Wilts. The question in dispute in the action had reference to the use of the words "Monks' Park," as a description of the Bath stone raised from the quarries of the respective parties on the Monks' Park Estate, Corsham, belonging to Sir Gabriel Goldney, Bart., M.P. The plaintiff claimed in the action that he had the only quarry in Monks' Park, Corsham, that he alone was able to supply the genuine "Monks' Park" stone, that "Monks' Park" stone had acquired a high reputation, and was a mineral specially adapted for weight-bearing purposes, and for resisting carbonic acid gas and atmospheric influences, and was in great demand for large buildings; that he had registered a trade mark, of which the words "Monks' Park" formed a prominent part; that he had first adopted the words "Monks' Park" as applied to his stone, and that the defendants had no quarry at "Monks' Park," and that they had been selling stone as "Monks' Park" which was in fact not "Monks' Park" stone; and he claimed the exclusive right to the words "Monks' Park" as applied to Bath stone.

The defendants contended they had a right to use the words "Monks' Park," that they had 96 acres of the minerals of the Monks' Park Estate, whilst the plaintiff had only 30 acres; that the plaintiff had no exclusive right to work the minerals at "Monks' Park," or to use those words; that their minerals were within 300 yards of the plaintiff's; that they were working the same deposit of stone, and that it was in every way equal in quality to the plaintiff's. They also said they had not infringed the plaintiff's trade mark, and that they had been selling their stone for two years under the name of "Pictor's Monks' Park," with the knowledge of the plaintiff.

The plaintiff originally moved to restrain the defendants from selling, or offering for sale, any stone under the name "Monks' Park" or "Monks' Park Stone," other than stone obtained from the plaintiff's quarry, and to restrain them from using the words "Monks' Park" as the name or description of any of the defendants' stone, and also that the defendants might be restrained from infringing the plaintiff's registered trade mark.* The motion was argued at considerable length, and was before Vice-Chancellor Bacon for several days, Mr. Horton Smith, Q.C., and Mr. Bradford (instructed by Messrs. Moger), then appearing for the plaintiff, and Mr. Millar, Q.C., and Mr. E. W. Byrne (instructed by Mr. B. A. Dyer), for the defendants. Vice-Chancellor Bacon, in giving judgment, said the plaintiff's case utterly failed. The evidence of Sir Gabriel Goldney and others showed that the name of the whole estate in which both parties had quarries was "Monks' Park." The defendants had as much right to use that name as the plaintiff. They were working the same deposit of stone, held under the same landlord, under the same title. It was proved that the bed of stone under the Monks' Park Estate which the plaintiff quarried as well as the defendants was of the same kind and quality, being of the same bed. A most grave and serious charge had been made against them, of palming off stone as "Monks' Park" stone when it was not so. That charge was unsupported by any evidence, and was entirely disproved. The evidence showed that the defendants had been selling and advertising largely their stone as "Monks' Park," and the plaintiff knew it. He (the Judge) refused the motion. He could not give costs at that stage, as it was an interlocutory motion, but when the costs had to be dealt with, there would be no difficulty in deciding who should pay them.

The plaintiff afterwards continued proceedings, and applied for a further affidavit of discovery by the defendants, but the application was refused by the Vice-Chancellor.

The plaintiff thereupon appealed, and the matter was argued before Lords Justices Cotton and Lindley, who dismissed the appeal with costs.

Upon the present application, an order was made that the action be discontinued, the plaintiff not to bring another action against the defendants in respect of the same subject matter, or relief sought, and it was also ordered that the plaintiff should pay to the defendants their costs of the action.—*Communicated.*

SUMMER SKETCHING.

SIR,—I have read with much pleasure the timely and useful article on "Sketching" in the last *Builder* [p. 81], and I shall be glad if you can spare me space for a few words to advocate a method of sketching which I found useful when I was a student, and which I believe other students, especially those beginning to sketch, may pursue with advantage. I refer to geometrical sketching, *i.e.*, taking a feature of a building, and making, roughly, such sketch-drawings as would be needed had it to be rebuilt. To do this one must measure the main dimensions of the plan, and lay them down to scale at the bottom of the page, on the spot, and then draw up the lines of an elevation over this plan, and a section by the side of the elevation. The heights up to 8 ft. or 9 ft. can be measured readily; often when there are regular divisions, *e.g.*, quoins, rustics, courses of bricks, stay bars, they can be got with accuracy to a very much greater height. What cannot be so reached must be drawn in proportion to that which has been ascertained, and in doing this a scale or two-foot rule allowed to hang perpendicularly between the eye and the object will be useful. When the general drawings are thus completed the profiles and enrichments should be sketched to a large size, and when practicable also to scale.

Among the recommendations of this method are the following: (1.) It necessitates a certain amount of careful and searching examination of the building or feature, so that by the time the drawings are made one understands something of how it has been designed, and, to quote the true words of William Burges, given in your article, how the effects have been produced. (2.) The beginner is working in a method rendered familiar to him by his office work, and consequently is more able to make satisfactory sketches than if he begins with perspective views. (3.) The drawings are valuable for reference, and, at any rate in Renaissance work, are more likely to be of use than perspective sketches.

Of course as the student gets on he will more and more relinquish this method for perspective,—and then it may be useful to hint that where a really careful perspective drawing is intended, the camera lucida will be found to render the greatest possible assistance in obtaining the general outline and the main proportions, and the curves of foreshortened arches. It is not often advisable to make the whole of an outline with this instrument, but the use of it for the first half-hour smooths the way towards a good sketch wonderfully.

It is not every one who has *sang froid* enough to follow your advice and disregard street crowds. Those who would fain be left alone will find that if they can teach themselves to sketch standing, with the back to a wall, or, better still, to a doorway, they will be left unmolested for hours. The curious passer-by, finding that he cannot get a glimpse of the paper, soon passes on. When sketching seated in quiet back streets, I have found it useful, when the people had found me out and accumulated, to pack up and move off, go a little circuit and come back to my spot. The crowd has, of course, dispersed, and the street Arabs, believing that the possibilities of amusement in that particular street are exhausted, do not as a rule come back for a long time.

T. ROGER SMITH.

THE "IRON PROCESS" FOR SEWAGE.

SIR,—Allow me a few words of explanation with reference to your notice of the little pamphlet on "The Iron Process," in to-day's *Builder* [p. 111]. It is quite natural for a reviewer to assume that it would require either a long time or powerful machinery to incorporate a small quantity of iron with a large quantity of sewage. But the difficulty has been practically overcome by my process, as to which I can now speak of the practical application in five instances.

The invention consists, in the first place, of a method of maintaining the perfect solubility of iron in water, as to which the chemical difficulty has been long thought to be inseparable.

In the second place, the solution thus obtained is capable of easy dilution to any requisite extent, say to the proportion of a grain of metallic iron in ten gallons of water. And this is effected, in point of fact, in the sewers themselves, by the simple action of the daily flow. That the same action extends into the streams into which the effluent falls I have experimentally proved during the present week, in the case of a brook, which, at the distance of more than a mile from the influx of a sewer, was, last month, unapproachable from the foul smell, and which is now, after ten days' treatment, running perfectly sweet and clear.

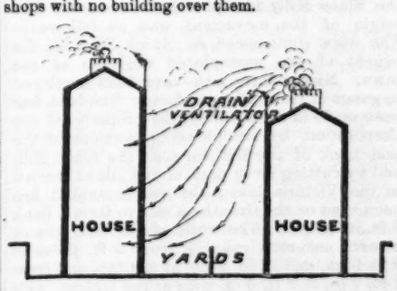
Holden's process, mentioned by the reviewer, is referred to on p. 5 of the first pamphlet, and the avoidance of costly works is mentioned on p. 14. Thanking you for the notice, I am sure that you will be glad to have the opportunity of adding this result of the logic of fact.

FRANCIS R. CONDER,
M. Inst. C.E.

Guildford, July 17, 1886.

DRAIN VENTILATORS.

SIR,—The now frequent ventilation of house-drains by the discharge of the impure air just above the roofs of dwellings, and the customary ventilation of our rooms mostly by means of the chimneys, induces me to draw your attention to the very great danger to health in all blocks of inhabited buildings where there are not frequent openings left down to the ground level from the street to the back premises, or, at any rate, by having frequent archways or shops with no building over them.



SECTION.

Every one is aware that when a back window is opened and the wind blows towards such window, the air comes in at it, and if all the back yards be enclosed by buildings such air must come either through the opposite houses or over their roofs; and if over their roofs, then it will bring down with it all the vitiated air from the drain ventilators and from the flues.

I saw this practically illustrated one warm morning at the backs of some houses in a street that is scarcely ever free from fever, &c., there being more than forty dwellings in one continuous row, with another row of forty dwellings at their back. One could here see the smoke turn down from the roofs

* Tangley Manor House will be found illustrated and described in the fourth volume of the society's "Collections," by the late Mr. Charles Baily, architect.

* See *Builder* for Aug. 1, 1885, p. 170.

of the one row towards the yards and back windows of the other row along their whole length. How could it be otherwise? Unless there be frequent openings between the buildings it is impossible for it to be otherwise.

There are many blocks of buildings in that same neighbourhood where there are no openings whatever to the ground level between any of the buildings to allow the air to pass from the streets to the back yards and premises without thus going over the roofs.

R. FELIX CAMPBELL.

TRURO CATHEDRAL: CENTRAL TOWER LANTERN STAGE.

SIR,—By the great kindness of yourself and the editors of some of your contemporaries, I have been allowed to make an appeal for funds to carry out the above. I am sure that those of your numerous readers who have so kindly come forward to help, will be glad to hear that the effort has been so far successful that 1,831*l.* has now been raised in answer to my appeal.

Believing that if the work were started the additional 1,043*l.* still required would soon be forthcoming, the executive committee have given orders to commence, and we are now working the stones and the scaffolders are making the requisite preparations to enable us to commence setting them.

With very many thanks to you, sir, for your kind and valuable assistance.

ROBERT SWAIN,
Clerk of the Works.

PROVINCIAL NEWS.

Bath.—The late Sir T. W. Holburne has bequeathed the whole of his art treasures to the city of Bath to form the nucleus of the permanent museum to be erected in that town. The collection includes a gallery of pictures, and is specially rich in old Wedgwood ware, antique plate, china, majolica, bijouterie, &c. The trustees have appointed Mr. William Chaffers, the veteran antiquary and art expert, to arrange the catalogue and generally advise upon this valuable bequest.

Bridgwater.—At the meeting of the Bridgwater Town Council on the 15th inst., the Mayor said he thought the Council should consider the question of having an open-air swimming-bath provided for the town. He thought a large swimming-bath would be of great advantage, and if the town would give the water and the site, he knew several gentlemen would see there were none of the expenses of erection, &c., thrown on the rates. He suggested that Mr. Laffan, the surveyor, should be asked to prepare an estimate as to the cost. He thought the outlay would not be more than 200*l.* or 300*l.* After some discussion, the Borough Surveyor was instructed to prepare an estimate of the probable cost by the next meeting of the Council. Other towns would do well to copy the example of Bridgwater in seeking to provide cheap public swimming-baths.

Cooden (Sussex).—A cottage home for girls is about to be built at Cooden, Sussex, for Lady Clinton, from plans and under the superintendence of Mr. J. B. Wall, architect, London.

Grantham.—The large public bath for Grantham (constructed on the River Witham, near the Slate Mill) has just been opened. The origin of the movement was as follows:—The work commenced on March 22nd for the benefit of the unemployed workmen of the town. Ninety-three men have been employed in gangs of from thirty to forty. The bath has been made in a plantation, the property of the Corporation, by straightening portions of the east bank of the Witham near the Slate Mill, and by cutting away part of the island formed in the Victoria lake: the soil excavated has been used on the Grantham side to form a bank 8 ft. in height. The walls of the bath are of cement concrete, ranging from 5 ft. 6 in. to 9 ft. high, and 12 in. wide at the top, and from 1 ft. 9 in. to 2 ft. 6 in. wide at the bottom, with a batter of one in six upon the waterside. The floor is also of concrete. The quantity of cement used upon the work was seventy-two tons, supplied by the Rugby Portland Cement Co. and the Arlesey Lime and Portland Cement Co. A weir has been placed at the south end of the bath, at the same level as the old one, so that only top water can enter, and when the river is run down the level of the water in the bath will remain constant. At the bottom end a 16 in. sluice is fixed to discharge into the river below the old weir. A 9 in. sluice is fixed at the top end in case the scarcity of water should not fill the river sufficiently high to run over the weir. On the east, or Harrowby, side of the bath there is a fence 7 ft. high, which is continued over the weirs at either end. The dimensions of the bath are:—Length 183 ft., width varying from 33 ft. to 72 ft., depth from 3 ft. at south end to a little over 6 ft. at the other; 40 ft. from the south end the depth is 3 ft. 6 in., and in the next 80 ft. the bottom falls 2 ft., and the lower 63 ft. varies from 5 ft. 6 in. to 6 ft. in depth. Water area a quarter of an acre; area of bath and enclosure half an acre. Dressing-sheds, a caretaker's hut, seats, pegs, life-buoys and ropes are also provided. The total cost has been about 300*l.*, but there are several matters of detail yet to complete. The whole work was designed and carried out by Mr. S. G. Gamble, A.M.I.C.E., Borough Surveyor, Grantham.

CHURCH-BUILDING NEWS.

Accrington.—The foundation-stone of the new Church of St. Peter, Scaitcliffe, Accrington, was laid on the 17th inst., with Masonic ceremonies. Mr. Henry Ross, of Accrington, is the architect for the new building, and his plans comprise a nave, north and south aisles, chancel, organ-chamber, and vestries, and the interior of the new church will be lined with stone. The whole scheme will cost upwards of 6,000*l.* to complete.

Bridlington Quay.—Christ Church, Bridlington Quay, has been re-opened, after renovation. The old sittings have been replaced by modern seats, designed by Messrs. Smith & Brodrick.

Bristol.—The foundation-stone of the new Church of St. Francis, Bedminster, was laid on the 10th inst. The site has been given by Sir Greville Smyth, Bart. The accepted contract for the foundations was that sent in by Mr. A. J. Beaven. The amount thus expended was 685*l.*, and this work was completed satisfactorily early in the spring of the year. Soon after this the Church Extension Society voted a further sum of 750*l.*, and it was then decided to proceed with the second instalment of the building. In plan the church consists of a wide and lofty nave, with north aisle the same height to the plate as the nave, chancel, organ-chamber, side chapel, vestries, &c. The principal entrance will be on the north side through a tower, which, at no distant date, it is hoped to erect. The materials are local stone for the walls, with Cattybrook bricks for all dressings and inside facework, the columns of the nave, window cills, and tracery being of Bath stone. The roofs, which are to be open-timbered (except the chancel, which will be boarded and divided into panels) are to be covered with Broseley tiles. Gangways and chancel floor tiled, and rolled cathedral glass in the windows. Heating and lighting will be an addition to the cost (about 500*l.*), including boundaries, as well as fittings of every kind. This church will accommodate 750 persons. Mr. John Bevan, of Bristol, is the architect.

Great Burstead (Essex).—At a meeting of the restoration committee held last week, the question of the immediate repair of the spire and tower was discussed, and it was resolved to ask the architect (Mr. Wood) to furnish the committee with various estimates. The architect had estimated the total cost of repairing the spire and tower thoroughly at from 190*l.* to 200*l.* Mr. Barnard was requested to see Mr. Cross, the builder, and arrange with him to commence the work as soon as possible.

Guernsey.—A Guernsey newspaper says that the restoration of the Town Church progresses well. A piece of marble mosaic paving has been laid down in the choir by Messrs. Heaton, Butler, & Bayne. It is estimated to cost 112*l.*, and is the gift of the family of Mr. John Le Mottée, Lieutenant-Bailiff. The various works entrusted to Mr. Hems, of Exeter, are making satisfactory progress. The pulpit is chiefly composed of Caen stone, with five statuettes of that material. The figures are those of our Lord as the Good Shepherd, with the text, "Feed my sheep;" St. Peter, with the keys in one hand and a church in the other; St. Martin, giving alms to a beggar; St. Sampson and St. Magloire in episcopal vestments. The cornices and ornamental bosses are of fine Derbyshire alabaster. The whole pulpit is supported on a solid octagonal shaft of red Devonshire marble, surrounded by a circle of shafts of Purbeck marble.

Stainland (near Halifax).—It is proposed shortly to commence the erection of a new church at Stainland, the estimated cost of the building being 5,500*l.* The plans, which have been prepared by Mr. W. Swindon Barber, architect, Halifax, show a structure in the Perpendicular style, with a nave 81 ft. 6 in. long and 22 ft. wide; a north aisle, 81 ft. 6 in. long and 12 ft. wide; and a south aisle, 64 ft. 9 in. long by 12 ft. wide. The chancel will be 31 ft. long, and of equal width with the nave. On the north side will be the organ-chamber, 19 ft. long and 12 ft. wide, with very wide arches opening into the choir and north aisle. On the south side of the choir are clergy and choristers' vestries, adjoining which will be the south porch. Under these vestries will be placed the heating apparatus. The altar will stand on a wide platform, and will be raised 7 ft. above the level of the floor of the nave. It is hoped that the choir screens and fittings may be executed in oak. There will be sitting accommodation for 582 persons, and it is proposed that the seats shall be heavy open benches. It is also proposed to line the walls with ashlar in place of plaster. The exterior will necessarily be plain. The most striking feature will be the battlemented tower, 13 ft. square and 70 ft. 6 in. high, with its octagonal staircase and imposing east elevation. The tower will provide accommodation for eight bells. Local stone will be used.

Woodford.—The foundation stone of the new Church of the Holy Trinity, Hermon Hill, Woodford, was laid on the 9th inst. The church is being erected to take the place of the iron church which was built four or five years since. It will consist of a nave, with north and and south aisles, chancel, organ-chamber, and vestry. The porch, tower, and spire will be at the north-west angle. The style of the work will be Norman Transitional. The nave will be five bays in length, the pillars being of a massive circular form carrying arches of two orders. A clearstory of three lights is formed by each bay. The chancel arch is lofty and imposing, the inner rim being carried on corbels so as not to obstruct the view from the nave. The chancel is circular-ended. The heating arrangements are placed under the organ-chamber, and are approached from the outside. The exterior will be of stone, the windows being obtusely pointed, and very little removed from semi-circular form. The length of the nave will be 102 ft., and the width 62 ft. The total length of the church from east to west will be 153 ft. The tower and spire when completed will be 166 ft. high. The architect is Mr. James Fowler, of Louth, and the builder is Mr. S. Burton, Newcastle-on-Tyne. The amount of the contract is 4,500*l.*

The Student's Column.

STONE QUARRIES.—IV.

SOME PHYSICAL PROPERTIES OF IGNEOUS ROCKS.

BEFORE proceeding to describe in detail the granite quarries of the British Islands, it will be well, perhaps, to give a few particulars concerning the value of the term "granite," as used in the market, and we desire to be very explicit on this point.

The essential minerals of a granite are quartz, felspar, and mica, though it often contains in a small degree a few accessory minerals. To begin with, then, we must lay down the law that any rock which does not contain the three minerals referred to is not a granite. If in addition to these it contains hornblende, it is not a syenite or a granite, but a hornblendic granite; whilst if hornblende is present with only quartz and felspar, the rock is a syenite and not a granite. Yet in spite of this, each of these mineral compounds is known,—generally speaking,—in the market, as granite.

People who have to deal practically with the subject will find that, although this may seem useful, it is misleading in many respects, and has probably been productive of more errors of judgment as to the value of granite,—properly so called,—than any other cause.

Ordinary workmen may call whatever they please granite; but the practical man should be more careful about it. We must most strenuously demur to results, obtained from any one of the kinds of rock, being compared as an index with all or any of the others, no matter

whether the result of the comparison is favourable or not. There cannot be a shadow of a doubt that this has been done, and that the practice is in full force at the present day. We cannot, of course, attribute the circulation of these unfair comparisons to the fault of those who make them, because they may not know the scientific values or the chemical or physical properties of the particular stones mentioned in their circulars, and so must take things as they stand. But there is no reason why those who have to select or buy the stones should not know the difference between them. One afternoon in a mineralogical museum, such as that at Jermyn-street or South Kensington (Natural History Department), aided by what we have before said on the subject,* would go a long way to put the student in the right direction to determine the rocks under consideration. He would then be able to see why the apparent values of some of the extraordinary results referred to do not coincide with what is found in practice. In other words, he would find that stones, having widely different chemical and mineralogical constitutions and of variable structure, are lumped together and called "granites," a name to which they have no more claim than to sandstones or limestones.

If we obtain a list giving these varied rocks,—all called granites,—we shall find that the specific gravities and crushing weights of each (arranged in a tabular form) are compared with one another, and as a general rule the stone particularly advocated is placed at the top, showing, of course, the highest crushing weight of any on the list, and so forth. Any stones that may have a higher crushing weight, or in fact any property that can be compared in figures that show a higher value, are not usually placed on the list,—whether designedly or not, it is needless to inquire.

But there is not the slightest reason why they should be so particular in regard to these matters, which are often against their interest. The practical man immediately sees that there is something the matter, because he knows from experience that certain stones on the list, bearing a comparatively low crushing weight, are decidedly better for his purpose, even when strength is required, than those with higher results. He naturally begins to find fault with the theoretical value of the crushing weights, and finally disposes of them as being of no practical value whatever. And from theoretical grounds, we shall see that he is quite right in doing so, for if the list from a particular quarry states that the stones compared in it are granites and we find that they are not, but are stones of different characters, it is clear that the results are not strictly comparable.

Then, again, there is a class of stone-merchants who distinctly state the nature of each of the stones with which their own is compared, and although these stones are very often of quite different character from each other, the merchants cannot be blamed, as they simply appeal to the intelligence of their clients. The student should know by this time that such lists have little or no practical value.

From the foregoing, some may feel inclined to think that we under-estimate the value of "crushing weights," but, on the contrary, we think that they are useful when stones of approximately similar mineralogical composition are tested and the results compared. For instance, granite should be compared with granite, syenite with syenite, greenstone with greenstone, and so on.

Further than this. In the case of granite, we have a peculiar substance to deal with. If we place a piece of coarse porphyritic granite,—say, from near Penzance,—side by side with a piece of very fine blue granite, such as that from Rubislaw quarries, Aberdeen, the difference in structure is very striking, so much so, that at first sight they do not appear like the same class of stone. We have before stated in these columns† that experiments as to crushing on small cubes of stone, containing large crystals, are not of much value. Applying this remark to the two granites under consideration, we see that the results on a 6-in. cube of the porphyritic Penzance stone would be of no use. If machinery permitted it, and a very large block of each were tested, it would be quite another matter.

This leads us to the conclusion that, in respect to granites, the crushing weights on 6-inch cubes are useful only for comparison of the finer-grained varieties; and any one who is selecting stone should therefore know the grain of the rocks, the results of compression of which he is comparing.

In regard to aqueous rocks, the specific gravity is in some measure an index to their durability; but when we come to apply it to granites and stones of a like nature, it begins to lose its value in this respect. Its principal use in igneous rocks is in assisting to calculate the weight of a certain sized mass, so that it may be used by the engineer in estimating the strain on certain portions of large structures. It is very convenient also to know the specific gravity of granites intended for marine works, as,—other things being approximately equal,—the higher specific gravity granites are the best for these purposes.

The specific gravity of igneous rocks is frequently quoted in matters connected with road-metalling; but though this occasionally enables us to form some idea of the "resistance to crushing" under ordinary circumstances, for road-materials a knowledge of the specific gravity is practically useless, whilst whatever value it might have in assisting us to discover what pressure these materials are capable of resisting, is certainly lost. The results might be useful where the stone is to be built in a wall, and where the pressure is tolerably equal all the year round, but road metal is not subjected to such steady pressure. The pieces that form it are suddenly called upon to bear enormous weights, which are withdrawn as suddenly as they came, so that if the stones used for these purposes are not *tough* they soon snap. Care must be taken to distinguish the difference between the hardness of a stone and its toughness. Some people seem to think that hard stones are necessarily tough, but such is not the case. Many of the hardest stones in existence are very brittle. Toughness in granites, syenites, and the like is occasioned by the disposition and size of the crystals forming them, these crystals being more interlocked in the tougher varieties of these stones than in the others.

The student might well ask, then, why the "crushing weight" is not an index to toughness, seeing that the two things are both dependent on structure. In answer to this, we must again urge that the steady pressure of machinery on a plane surface must not be compared with that uncertain, uneven, grinding action to which road-metal is subjected.

In addition to being tough, however, road-metal must be made of *durable* minerals; for it is often subjected to very severe chemical tests. On some country roads, for example, the stones, after a rain, might be described as being literally in a chemical solution, which is trying its best to disintegrate the stone.

Although we have defined syenite as being made of quartz, felspar, and hornblende (excluding the few accessory minerals, for simplicity), we have not stated in what particular quantities these may exist, and this is an important factor in the inquiry. It will be found that the proportions vary considerably, and on this the differences in durability and specific gravity are largely dependent. There cannot be much doubt that in the syenites so commonly used as road metal, the rate of decomposition of the felspar is the principal source of the superiority of one kind over another.

The most durable syenite, then, is that which has the least felspar, and, we may add, the least iron in that mineral. Syenites which contain an excess of felspar, generally have a low specific gravity, unless the hornblende is superabundant.

Those hornblendic granites, in which the felspar has a tendency to occur in rather large crystals here and there, cannot be expected to make such good road metal as syenite, which does not exhibit this feature, is fine-grained, has comparatively little felspar, but much hornblende.

This brings us to the point, and enables us to see why it is so very essential to distinguish between rocks of different structure and mineralogical constitution, but which bear the same name in the market.

The owners of igneous rocks quarried for road-metal would do well to have the percentage of the minerals in their stones determined by Delesse's method, if they desire to give surveyors an idea of the respective merits of their materials.

* The *Builder*, vol. l., p. 694.
† The *Builder*, vol. l., p. 56.

RECENT PATENTS.

ABSTRACTS OF SPECIFICATIONS.

9,588, Window Fasteners. E. F. Haynes and T. F. Ford.

The fastener is made in two parts. A kind of rack is fixed on the side rail of the top window-sash, into this rack a spring catch forces a smal. bolt, the said catch being fastened upon the bottom sash. It allows the window to be opened some 6 in. or more.

9,738, Cowls for Chimneys, &c. W. Gordon.

This invention provides simple and effective means for preventing the accidental removal by the wind of the rotating parts of hoods or cowls usually fitted on ventilators for chimney or ventilating shafts, also to remove the common fault of chimney-sweepers neglecting to fix the revolving portion of ordinary cowls. This cowl is self-acting and self-fixing. The rotating cowl is provided with a central stem or spindle fitted into a central tube secured by a framing on the stationary part of the chimney-shaft, the upper end of the tube forming by preference an oil-can or receptacle for lubricants. A spring-catch fits over the disc when in place, and prevents the accidental withdrawal of the stem or of the cowl, of which the stem forms a part.

4,433, Angle-Measuring Instrument and Level. G. Smith, E. & C. H. Warren.

This invention consists in an improved device for setting-out angles, whereby an exact horizontal or vertical line may be established and the relative horizontal positions of separate or distant objects accurately and clearly outlined. The appliance resembles somewhat a spirit-level, and it may be used as such, but it is pierced with an eye-tube covered with a slotted plate, with a mirror set at an angle of 45°. The plate is capable of longitudinal adjustment, and when any object is seen through the adjustable slotted plate, the relative angle with regard to the object to which the instrument is applied is also clearly ascertained.

78, Graining Tools. C. A. Watkins.

This relates to the tools used in imitating the straight broken lines representing the open grain of oak and the like. The lines are transferred on the work to be grained by means of a roller comprised of thin metal discs with portions cut from their edges, the discs being separate from each other and revolving loosely on an axis held in a frame of light metal. The colour is fed to the roller by a brush held against it as it rolls against the surface on which the graining is to be done. The brush is fixed to the roller by a small adjustable blade, and can be used in any position. A second feeding roller of wood or india rubber is also sometimes used.

NEW APPLICATIONS FOR PATENT.

July 9.—8,958. J. Richardson, Band Saws.—8,960, E. Airey, Preventing Draughts through Doors, &c.

July 10.—9,023, J. Walton and W. Edwards, Alarm Locks and Latches.

July 12.—9,050, T. Thornton, Door Check.—9,054, A. Ayers, Clamps.—9,075, A. Williams, Dust-bin.

July 13.—9,111, H. Buchan, Valve Apparatus for Water-closets.—9,143, J. Gough, Cleaning Chimneys.

July 15.—9,186, J. Nicholson, Step Ladders.—9,202, R. Woodhouse and S. Mitchell, Guards for Circular Saws.—9,225, J. Parlour, Workman's Daily Food Carrier.

PROVISIONAL SPECIFICATIONS ACCEPTED.

6,312, J. Mason, Windows.—6,565, J. Bean and W. Gaines, Closing and Preventing the Slamming of Doors.—6,582, S. Wright, Exhausting Syphons for Cisterns and Taps.—7,067, W. Smeaton, Sen., Flushing Water-closets, &c.—7,068, W. Smeaton, sen., Flushing Water-closets, &c., and Preventing Waste of Water.—7,069, W. Smeaton, sen., Flushing Water-closets, &c., and Preventing Waste of Water.—7,397, J. and B. Craven, Moulding Bricks, Tiles, &c.—7,597, J. and J. Crombie, Concrete Floors, Pavements, &c.—8,699, R. Milhuish, Wood-workers' Cramp.—6,546, D. Saunders, Hanging Sashes.—6,769, W. Ross, Combined Water service and Waste-preventing Valves.—6,817, J. Partington, Metal Doors and Frames.—7,060, C. and F. Smith, Door-checks.—7,282, J. Jefferies, Pneumatic Door-checks. 7,455, J. Kaye, Automatically Latching and Bolting Doors.—7,468, C. Baldock, Door Latch.—7,572, J. McConnell, Soldering.—7,683, J. Fawcett, Weather-bar for Doors and Windows.—8,113, R. Halliday, Securing Glass to Frames or Sashes.—8,175, T. Howdill, Fitting Window-sashes and Sash-frames.—8,417, L. Dondy, Wall Decoration.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to opposition for two months.

8,483, D. Hall, Wood-working Machine for Staircases.—8,640, J. Richmond, Register Stoves.—10,544, M. Partington, Lime and Cement Kilns.—5,175, S. Bott, Cupboard Turns, &c.—6,365, G. Thornton, Preventing Noise in Closing Doors.—

11,133, H. Dawson, Ventilating Drains.—4,083, A. Emanuel, Double Waste-preventing and Regulating Valve.—4,290, R. Willoughby, Guards for Circular Saws, &c.—6,663, J. Purnell, Hydraulic Door Springs and Checks.—6,991, L. Nelke, Incidence Windows or Vault Lights.—7,647, H. Diedrich, Tiles.

RECENT SALES OF PROPERTY.

ESTATE EXCHANGE REPORT.

JULY 12.

By BOND & SON.

Brixton—Ground-rents of 45*l.*, term 13 years..... £330
95 to 117 odd, Hackford-road, 13 years, no ground-rent..... 920

By Messrs. WILLMOTT.

Shepherd's Bush—3, Mardale-street, and stabling, freehold 870

JULY 13.

By BELTON & SONS.

Covent Garden, Bow-street—The Marquis of Anglesea, public-house, freehold, and the reversion to 22, Russell-street..... 3,720
Peckham-rye—No. 192, freehold residence 960
Kentish Town-26, Prince of Wales-crescent, freehold 460

By W. THOMPSON.

Kenley Station, near—The Rose and Crown public-house and 4a. 3r. 4p., freehold 3,500

By A. RICHARDS.

Smithfield—87 and 88, Long-lane, and 17, Middle-street, freehold 4,300
Edmonton—41 and 43, Upper Fore-street, freehold 650
Ground-rent of 20*l.*, reversion in 85 years 225
Stoke Newington—69, Green-lanes, 38 years, ground-rent 2*l.* 12s. 6d..... 235

By FURBER, PRICE, & FURBER.

Camden-road — 5, Rochester-square, 55 years, ground-rent 6*l.* 480
The reversion to three-fourths of 62, Pembridge-villas, Bayswater, freehold, life aged 73 years... 670

By DENNEHAM, TEWSON, & Co.

City, Threadneedle-street—Ground-rent of 1,250*l.*, reversion in 35 years..... 40,000
Ground-rent of 20 *l.*, reversion in 35 years 10,000
24, 26, and 27, Leadenhall-street, freehold 44,300
57, Fenchurch-street, 47 years, ground-rent 165*l.* 5,200

By ROGERS, CHAPMAN, & THOMPSON.

Pimlico—125, Lupus-street, 47 years, ground-rent 9*l.* 1,350
35, Denbigh-street, 39 years, ground-rent 8*l.* 550
36, Denbigh-street, 51 years, ground-rent 8*l.* 630

JULY 14.

By G. F. CALVERT.

Islington—36 and 38, Chalfont-road, 48 years, ground-rent 10*l.*..... 415

By RUSHWORTH & STEVENS.

Regent-street—44, Great Marlborough-street, freehold 4,350
Mecklenburgh-square—No. 30, term 32 years, ground-rent, 42*l.* 470
Westbourne Park—6, Ranelagh-road, 73 years, ground-rent 6*l.* 1s. 6d..... 500
Dorset-square—29, Milton-street, 34 years, ground-rent 10*l.* 590

By BAXTER, PAYNE, & LEPPER.

St. Mary Cray—The Rookery, and 9a. 2r. 15p., freehold 5,000

By WARD & CLARKE.

Dulwich, Alleyn-road—Acacia Villa, 57 years, ground-rent 4*l.* 1s. 4d..... 630

JULY 15.

By EDWIN SMITH & Co.

South Kensington—130, Fulham-road, 22 years, ground-rent 5*l.* 510
Elm Cottage, adjoining, 22 years, ground-rent 5*l.* 5s. 500

By GROGAN & BOYD.

Tunbridge Wells—A pair of freehold cottages 330

By T. W. FRY.

Vauxhall—62, 64, and 64, Harleyford-road, 5 years, ground-rent 15*l.* 175

By FAREBROTHER, ELLIS, CLARKE, & Co.

Tewkesbury, near—Northway House, and 33a. 2r. freehold 6,000
The Croft, and 4a. 0r. 14p., freehold 500

By SOUTHERDEN, MORRIS, & Co.

Cuckfield, Sussex—Two farms, about 283a. 2r. 11p., freehold 3,000

By REYNOLDS & EASON.

Finchley, High-road—Five copyhold cottages..... 255
An enclosure of freehold land, 3a. 1r. 30p..... 600

JULY 16.

By MASTERMAN, EVANS, & Co.

Berkeley-square—52, Charles-street, 63 years, ground-rent 100*l.* 3,120
Canonbury—82 and 84, Canonbury-road, 22 years, ground-rent 21*l.* 735

By BAKER & SONS.

Stoke Newington-road—No. 168, 91 years, ground-rent 20*l.* 940
Southwold, near—The residence, Reyden Hall, and 7a. 1r. 18p., freehold..... 5,150

By ROBERT REID.

Regent's Park—7, Osnaburgh-street, 26 years, ground-rent 20*l.*..... 85
Edgware-road—Improved ground-rents of 5*l.*, term 35 years 930
Oxford-street—16, Grense-street, copyhold 76
Pentonville—2, Amwell-street, 25 years, ground-rent 7*l.* 295
Edgware-road—Ground-rent of 72*l.*, term 35 years 995
Kentish Town—11, Malden-road, 63 years, ground-rent 8*l.*..... 480
Hampstead—16, Lismore-circus, 76 years, ground-rent 6*l.*..... 240

By COLLETT & COLLETT.

Westbourne Park—7 and 8, Golborne-gardens, 78 years, ground-rent 14*l.* 400

Miscellanea.

A Testimonial to H.R.H. The Prince of Wales.—In response to a general wish that steps should be taken to give expression to the appreciation which all those who are connected with the Colonial and Indian Exhibition feel for the deep interest which H.R.H. the Prince of Wales, Executive President of the Royal Commission, has evinced in the undertaking, a meeting was held on Wednesday, the 14th July, at the residence of Earl Granville, which was attended by Members of the Royal Commission, the Executive Commissioners for the Colonies and India, and others. Earl Granville having taken the chair, and having briefly explained the objects of the meeting, it was proposed by Lord Iddesleigh, seconded by Sir Charles Tupper, High Commissioner for Canada, and unanimously resolved:—

"That the eminent services of his Royal Highness the Prince of Wales, in the promotion of the Colonial and Indian Exhibition, ought to be marked in some fitting manner; That the members of the Royal and of the Colonial Commissions believe that the gentlemen who have been connected with the work, both in the Colonies and in India, would desire to share in the public appreciation of his Royal Highness's services, and it is accordingly considered that a piece of plate, commemorative of the Exhibition and of the great interest which his Royal Highness has practically evinced in its success, should be obtained for presentation to him."

By subsequent resolutions it was resolved to open a subscription list, and a number of noblemen and gentlemen were appointed to carry out the resolution. The amount of subscription by any one person is limited to two guineas.

A New Suburban Building Estate.—The facilities afforded by the Great Eastern Railway have led to the laying out of several estates near the metropolis for building purposes. One of these is the Oakleigh Park Estate, situated at Harold Wood, between Romford and Brentwood, and closely adjoining the Harold Wood Station of the Great Eastern line. The estate occupies an area of upwards of 12 acres, and is at present being laid out for building. Ten new roads intersecting the estate are now in course of construction. The land has been divided into about 350 plots, and the first sale, comprising 100 plots, took place in a marquee on the ground on Monday last, Messrs. Baker & Sons being the auctioneers. Mr. Baker observed that the plots he was about to offer ought to be worth not less than 2*l.* per foot frontage, but they were all to be sold absolutely without reserve. All the roads now in course of formation on the estate would be completed within six months. The drainage had already been effected, and the water company's mains had also been laid down. The first twenty lots, having frontages of 17 ft., were sold to one purchaser for 17*l.* each. Several shop plots, having also frontages of 17 ft., realised from 28*l.* to 50*l.* each. A hotel plot, near the approach to the railway station, having a frontage of 70 ft. and a depth of 100 ft., realised 260*l.*, the purchasers being understood to be Messrs. Ind, Coope, & Co., brewers, of Romford. The remaining plots, having frontages varying from 17 ft. to 20 ft., were sold at prices averaging about 20*l.* each. The whole of the 100 lots having been disposed of, and there being a call for more to be offered, twenty-five additional plots were submitted, all of which were readily sold. The proceeds of the sale amounted to about 600*l.* per acre.

Stained-glass Windows.—Some stained-glass windows have recently been placed in the Congregational Church, Approach-road, Victoria Park, by Messrs. Marshall, Campbell Works, Stoke Newington, the subjects being "The Prodigal Son," "Christ Blessing Little Children," "The Good Shepherd," and "The Good Samaritan."

The New Coinage.—There is no sign of the new coinage at the Mint just yet; in fact, there is no sign of any coinage. The presses are under repair, and the public are shut out. It will be months before they begin to turn out the new pieces by the hundred thousand. People must not be too impatient: the new coins are not due till next year; and between this and then there is ever so much to be done. Mr. Boehm, we believe, has not yet finished his model of the Queen's head,—a model that will probably be made of clay. This done we are still but at the beginning of a long process. The model has to be transferred to steel dies of various sizes to suit the different denominations of the coin. Then each die,—the sovereign die, the shilling die, and so on,—has to be duplicated many times over to admit of simultaneous operations when the coining begins. And all this is for one side of the piece only. There will probably be a new reverse, as well as a new obverse, and for this we must exactly repeat the same operation,—design, transfer to steel dies in various sizes, multiplication of the dies. As yet the engravers have not broken ground on a single die, nor can they till the sculptor has done his work. Mr. Boehm's model blocks the way.—*Daily News.*

Dustbins.—With the advent of hot weather complaints have appeared in the newspapers, and applications made at the police-courts, about delay in removing solid refuse from dwelling-houses. The law, in this as in other sanitary matters, for the metropolis and for the rest of England is contained in different statutes, but their provisions are practically the same. It is the duty of the local authority to clear the contents of the dustbin away, and those contents belong to them and not to the occupiers of the houses where they are produced. Rubbish is commercially valuable, and the local authorities or their contractors are able to make a profit out of it. Their rights are guarded by the law, which imposes a penalty on the householder if he obstructs the men who come to remove the rubbish, or if he removes it himself so as to prevent their making their profit. The local authority are bound, in return for their monopoly, to make proper arrangements for getting rid of the rubbish and for dealing with it so as to prevent a nuisance, but the provisions of the law for enforcing the performance of their duty appear to be inadequate. The law does not say how frequently the rubbish is to be removed, and gives the aggrieved householder but a very small remedy if it is left to accumulate on his premises. He is liable to a penalty of 5*l.* if he removes it himself; but after he has found the accumulation to be a nuisance, he can only give the local authority notice to remove it. They then have a week, within which, if they like, or their contractors are lazy, the accumulation of refuse may increase, and what was at first merely an annoyance may develope into a pestilential nuisance. After the week has expired, if nothing has been done, the aggrieved householder may recover a penalty of 5s. per day, but we know of no case where it has been held that he can recover any recompense for the annoyance to which he has been exposed, or the expense to which he may have been put. The complaints which have been made show that the law which gives at least a week before the scavenger is bound to attend to his work is a law which allows too great laxity. If the new Parliament can attend to matters of utility for this country, legislation which shall oblige these matters to be attended to sooner would seem desirable.—*The Sanitary Record.*

The Smoke Nuisance on the Thames.—The Council of the National Smoke Abatement Institution has for some time watched, with regret the failure of the Smoke Acts as regards steamers on the Thames, and has been in correspondence with the Home Secretary, calling attention to the great and needless production of smoke on the river. A short time since the Thompson furnace was brought to the notice of the Council, and the engineer of the institution, Mr. D. K. Clark, C.E., was instructed to make a series of scientific tests of the apparatus. His report being favourable, the Council arranged a trial-trip on the 15th inst. The tug *Alexandra*, fitted with the furnace, ran from Temple Pier to Richmond, lay there two hours, and then returned to Westminster. It is stated that during the whole of the run no products of combustion were visible at the top of the funnel, except for about one minute each time the furnace was stoked, when a little pale smoke was emitted. After the two hours' stay at Richmond, when the fires had been allowed to get low, they were both stoked simultaneously with coal dust, which produced smoke for nearly two minutes, but not of a dark shade. The owners of the tug, Messrs. Tough & Henderson, state that besides the practical abolition of smoke there is a saving of from 20 to 25 per cent. in the quantity of fuel burned, and that inferior coals can be used.

Raffety, Thornton, & Co., Limited.—The directors announce an interim dividend at the rate of 7 per cent. per annum, payable on the 5th of August next.

The Bickersteth Memorial Hall, Hampstead.—The foundation-stone of the Bickersteth Memorial-hall at Hampstead was laid on the 13th inst. The memorial-hall is to form the completion of a testimonial to the Right Rev. Dr. Bickersteth, Bishop of Exeter, for thirty years Vicar of Christ Church, Hampstead. The scheme includes a large hall, capable of comfortably seating 300 people, with class-rooms, soup-kitchen, &c., and will cost altogether, including the site, about 3,000*l.* The site, representing about 1,000*l.*, which is at White Bear-green, in close proximity to Christ Church, has been given by Mr. E. Gotts, J.P., and Mr. C. R. Cuff. The architect is Mr. Wilfrid J. Hardcastle, and the builders are Messrs. E. C. Howell & Son, of London and Bristol. The structure will be of the Georgian style of architecture, with bright red brick dressings.

PRICES CURRENT OF MATERIALS.

TIMBER.

		£. s. d.	£. s. d.
Greenheart, B.G.	ton	6 5 0	7 0 0
Teak, E.I.	load	11 0 0	15 0 0
Sequoia, U.S.	foot cube	0 2 4	0 2 9
Ash, Canada	load	3 0 0	4 10 0
Birch "		3 10 0	4 0 0
Elm "		3 10 0	4 10 0
Fir, Dantsic, &c.		1 10 0	4 0 0
Oak "		2 10 0	5 0 0
Canada		4 0 0	6 10 0
Pine, Canada red		2 10 0	4 0 0
" yellow		3 0 0	5 0 0
Lath, Dantsic	fathom	3 10 0	5 0 0
St. Petersburg		4 0 0	6 0 0
Wainscot, Riga	log	2 15 0	4 10 0
" Odessa, crown		3 7 6	0 0 0
Deals, Finland, 2nd and 1st	std. 100	7 0 0	8 0 0
" 4th and 3rd		6 0 0	7 0 0
Riga		6 0 0	7 0 0
Deals, St. Petersburg, 1st yellow		8 0 0	14 0 0
" 2nd "		7 0 0	8 0 0
" white		7 0 0	10 0 0
Swedish		6 0 0	15 0 0
White Sea		7 0 0	17 10 0
Canada Pine, 1st		17 0 0	30 0 0
" 2nd		13 0 0	17 0 0
" 3rd, &c.		6 0 0	10 0 0
" Spruce 1st		8 0 0	11 0 0
" 3rd and 2nd		5 0 0	7 10 0
New Brunswick, &c.		5 0 0	7 0 0
Battens, all kinds		4 0 0	12 0 0
Flooring Boards, sq. 1 in., Prepared, first		0 9 0	0 13 0
Second		0 7 6	0 8 6
Other qualities		0 5 0	0 7 0
Cedar, Cuba	foot	0 0 3½	0 0 4
Honduras, &c.		0 0 2½	0 0 4
Australian		0 0 2	0 0 3
Mahogany, Cuba		0 0 5	0 0 7½
St. Domingo, cargo average		0 0 5	0 0 7½
Mexican "		0 0 3½	0 0 4½
Tobasco "		0 0 4	0 0 6½
Honduras "		0 0 4½	0 0 6½
Maple, Bird's-eye		0 0 6	0 0 8
Rose, Rio	ton	7 0 0	10 0 0
Bahia		5 0 0	17 0 0
Box, Turkey	foot	0 0 7	0 0 11
Satin, St. Domingo		0 0 8	0 1 2
Porto Rico		0 0 4	0 0 5
Walnut, Italian			

METALS.

IRON—Pig, in Scotland	ton	0	0	0	0	0	0
Bar, Welsh, in London		4	10	0	4	17	6
" " in Wales		4	5	0	4	10	0
" Staffordshire, London		5	5	0	6	10	0
Sheets, single, in London		6	15	0	8	10	0
Hoops		6	0	0	7	0	0
Nail-rods "		5	10	0	6	10	0
COPPER—							
British, cake and ingot	ton	42	0	0	43	0	0
Best selected		43	0	0	44	0	0
Sheets, strong		48	0	0	50	0	0
" India		46	0	0	47	0	0
Australian		0	0	0	0	0	0
Chili, bars		38	12	6	39	0	0
YELLOW METAL	lb.	0	0	4½	0	0	4½
LEAD—Pig, Spanish		13	2	6	0	0	0
English, common brands		13	12	6	0	0	0
Sheet, English		14	5	0	14	10	0
SPELTER—							
Silesian, special	ton	14	5	0	0	0	0
Ordinary brands		14	0	0	14	2	6
TIN—							
Banca	ton	0	0	0	0	0	0
Billiton		0	0	0	0	0	0
Straits		98	5	0	98	10	0
Australian		98	15	0	99	5	0
English ingots		103	0	0	0	0	0
ZINC—							
English sheet	ton	18	0	0	18	5	0

OILS.

Linseed	ton	21	0	0	21	7	6
Cocoanut, Cochin		32	10	0	33	0	0
Ceylon		26	0	0	0	0	0
Copra		0	0	0	0	0	0
Palm, Lagos		24	0	0	0	0	0
Palm-nut Kernel		0	0	0	0	0	0
Rapeseed, English pale		22	10	0	0	0	0
" brown		21	0	0	0	0	0
Cottonseed, refined		18	5	0	18	15	0
Fallow and Oleine		25	0	0	45	0	0
Lubricating, U.S.		6	0	0	10	0	0
" Refined		8	0	0	13	0	0
TURPENTINE—							
American, in casks	cwt.	1	5	4½	0	0	0
" —Stockholm	barrel	0	15	0	0	15	6
Archangel		0	10	6	0	11	0

COMPETITIONS AND CONTRACTS.

Epitome of Advertisements in this Number.

COMPETITIONS.

Nature of Work.	By whom required.	Premium.	Designs to be delivered.	Page.
Girls' Grammar School, Maidstone	The Governors	No Premium	Sept. 4th	i.

CONTRACTS.

Nature of Work, or Materials.	By whom required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.	Page.
Erection of Chapel, Beckenham	.....	.....	.....	xii.
Broken Guernsey Granite	Mile End Vestry	J. Weir	July 28th	ii.
York Paving	do.	J. M. Knight	do.	ii.
Road Making	Tunbridge Wells Lcl Bd	do.	do.	ii.
Restoring Roofs, N. W. Hospital	Met. Asylums Board	W. Brentnall	July 30th	i.
Caulking Works and Repairs to the *Castalia*	do.	*Official*	do.	ii.
Repairs to Mooring Hulk *Benmore*	do.	J. W. Pegge	July 31st	ii.
Erection of Chapel, Sevenoaks	Rev. John Jackson	*Official*	do.	ii.
Laying Cast-Iron Socket Pipes	Oxford Corporation	John Willis	do.	xii.
Water Works Construction	Melton Mowbray U.S.A	T. & C. Hawksley	do.	xii.
Blue Guernsey Granite	Brentford Local Board	B. Latham	do.	xii.
Pipe Sewer	Wandsworth Bd. of Wks	— Lacey	August 3rd	ii.
Asphalte and Tar Paving	St. Mary, Islington, Ves	*Official*	do.	xii.
Granite, Flints, Curbing, &c.	Bexley Local Board	do.	do.	xii.
Making-up Road	Chiswick Local Board	E. R. Boulter	do.	ii.
Erection of Mortuary Chapel, &c.	Failsworth Local Board	A. Ramsden	August 4th	xii.
Road-making and Paving Works	Hammersmith Vestry	S. C. Trapp	do.	ii.
Construction of Reservoirs, &c.	Oswestry Corporation	*Official*	do.	ii.
Yellow Deal Ends and Battens	Eton Union	Filliter & Rofe	do.	ii.
Brick Sewers, &c.	Brighton Town Council	*Official*	August 5th	ii.
Erection of Guard Room, Store, &c.	Admiralty	P. C. Lockwood	August 10th	ii.
Steel Dock Gates	Limerick Harbour Com.	*Official*	August 12th	ii.
Erection of Public Hall, &c.	Exmouth Public Hall C.	W. J. Hall	August 13th	ii.
Laying and Jointing Pipes	Northwich Local Board	J. Johnson	August 16th	ii.
New Town Hall	Portsmouth Cor.	H. Bancroft	August 17th	xii.
Erection of New Club and Hall	Ingatestone, &c., Working Men's Club	W. Hill	August 21st	ii.
			August 25th	ii.
		H. A. W. Reeves	Not stated	xii.

TENDERS.

BOURNEMOUTH. — For alterations to side-bar, Victoria Hotel, for Messrs. Styring & Co. Messrs. Kemp-Welch & Pinder, architects:—

Davis & Lambert (accepted)	£125 0 0

BRISTOL.—For erecting St. Martin's Church, Montpelier, Bristol. Mr. John Bevan, architect, Unity-street, Bristol:—

	No. 1	No. 2	No. 3		Total.	
	£	£	£	s. d.	£	s. d.
J. E. Davis	1,300	1,500	1,500	0 0	4,300	0 0
G. Humphreys	—	—	—		4,249	0 0
Brock & Bruce	1,247	1,398	1,598	0 0	4,243	0 0
H. A. Forse	1,150	1,500	1,560	0 0	4,210	0 0
W. Church	1,186	1,450	1,534	0 0	4,170	0 0
S. Turner	1,168	1,228	1,579	0 0	3,975	0 0
F. Williams	1,053	1,288	1,585	0 0	3,926	0 0
Cowlin & Son	1,042	1,275	1,671	0 0	3,888	0 0
E. Walters	953	1,158	1,633	0 0	3,744	0 0
R. Wilkins & Sons	945	1,243	1,510	0 0	3,698	0 0
A. J. Bevan	1,040	1,150	1,370	0 0	3,560	0 0
J. Wilkins (accepted)	964	1,092	1,494	0 0	3,550	0 0
J. Perrott	966	1,161	1,367	0 0	3,494	0 0
C. A. Hayes	1,007	1,171	1,279	0 0	3,457	0 0
W. E. Walters & Son	919	1,011	1,511	1 8	3,442	9 3

BRONDESBURY.—For the erection of a lecture-hall, at Willesden-lane, Brondesbury, for the Building Committee of St. George's Presbyterian Church, Brondesbury. Mr. Henry S. Tyack, architect, John-street, Bedford-row, W.C.:—

Wm. Titmas	£1,330 0 0
P. S. Robertson	1,080 0 0
Alten & Sons (accepted)	950 0 0

CHISWICK.—For the erection of loose boxes, for the West Metropolitan Tramways Company's Depôt, Chiswick High-road. Mr. H. I. Newton, architect, Queen Anne's Gate, Westminster:—

Wilkes & Co.	£342 10 0
Burman & Sons	337 0 0
J. J. Bryant, Turnham Green*	274 0 0

* Accepted.

CLAPTON.—For alterations, &c., at the George public-house, Clapton, for Mr. G. Poole. Mr. Brown, architect:—

Hutchings	£620 0 0
Jas. A. Taylor	525 0 0
Stacy	502 0 0
Birchin	474 0 0
Dearsley (withdrawn)	398 0 0

CLAYGATE (near Esher, Surrey).—For the erection of a villa residence on the Claygate Park Estate, for the Right Hon. Lord Foley. Mr. Henry S. Tyack, architect, John-street, Bedford-row, W.C. Quantities by Mr. W. F. Titmas:—

W. Brown, Kingston	£1,560 12 0
Callingham, Thames Ditton	1,556 0 0
G. F. Havell, Kingston	1,530 0 0
S. H. Jarvis, Surbiton-hill	1,498 0 0
Oldridge & Sons, Norbiton	1,489 0 0
Lease & Son, Surbiton-hill	1,415 0 0
E. Wells, Kingston (accepted)	1,450 0 0

DEPTFORD.—For erection of stable and coach-house at 13A, High-street, Deptford, for Mr. W. H. Wellbeloved. Mr. John Jas. Downes, architect, 183, Lewisham High-road:—

Mark Redman	£230 0 0

[No competition.]

EXETER.—For detached chapel, farm buildings, and storage reservoir, at the City of Exeter Lunatic Asylum. Mr. R. Stark Wilkinson, architect, Furnival's Inn:—

Henry Phillips, Exeter (accepted)	£7,690 0 0

EAST DULWICH.—For two houses in Goodrich-road, for Mr. E. J. Powell. Mr. Alfred Howard, Martin's-lane, architect:—

Holloway	£1,398 0 0
Balaam Bros.	1,340 0 0
Larke & Sons	1,254 0 0
Croaker	1,140 0 0
J. & S. Bowyer	987 0 0
Maeers	806 0 0
Morse, Jun. (accepted)	780 0 0

FOREST GATE.—For three shops, to be erected at Forest Gate, for Mr. J. Jones. Mr. F. Wesley, architect:—

		Extra on Granite.
Barnes	£1,467 0 0	... £45 0 0
Palmer & Co.	1,415 0 0	... 30 0 0
Jas. A. Taylor	1,379 0 0	... 27 0 0
Nicholls	1,349 0 0	... 24 0 0
Whitehead	1,125 0 0	... 30 0 0
Dyer & Son	1,068 0 0	... 13 0 0
Walker	1,030 0 0	... 59 0 0
Beaney	980 0 0	... 30 0 0

GREAT HARWOOD (Lancashire).—For the erection of three chapels, for the cemetery at Great Harwood, for the Local Board of Great Harwood. Mr. Angelo W. R. Simpson, architect, Blackburn. Quantities by the architect:—

For the whole of the Works.

John Knowles, Over Darwen	£2,080 0 0
John Gibbons, Manchester*	1,998 0 0
Thomas Craven, Blackburn	1,979 0 0
Robt. Ibbotson, Blackburn	1,926 0 0

Accepted for separate trades:—

For Mason's Work.

Edwd. Lewis & Sons, Great Harwood	1,150 0 0

For Joiner's Work.

Kenyon & Moulding, Blackburn	381 10 0

Flagger and Slater's Work.

Pickles Bros., Leeds	112 0 0

Plumber and Glazier's Work.

John Shaw, Blackburn	125 0 0

For Plasterer's Work.

Alex. Airey, Blackburn	80 0 0

For Painter's Work.

John Hartley, Great Harwood	20 0 0

* Original tender sent in at 2,998*l.* Error of 1,000*l.* in the addition of summary afterwards corrected.

HACKNEY.—For three houses, to be erected at Hockley-street, Hackney, for Mr. Barnes. Mr. Tabberer, architect:—

Sargeant	£862 1 0
Themerson & Son	844 0 0
T. Taylor	833 0 0
Jas. A. Taylor	735 0 0
Baylis	665 0 0
Hughes	594 0 0

HOLLOWAY.—For erection of the new Great Northern Central Hospital, Holloway-road, London. Messrs. Keith D. Young & Henry Hall, architects, Southampton-street, Bloomsbury, W.C. Quantities by Messrs. Hovenden, Heath, & Berridge:—

Hall, Beddall, & Co.	£52,945 0 0
Dove Bros.	49,896 0 0
H. L. Holloway	49,127 0 0
Mowlem & Co.	48,139 0 0
Mattock Bros.	48,036 0 0
T. Rider & Co.	47,177 0 0
Patman & Fotheringham	46,768 0 0
John Grover	46,444 0 0
Perry & Co.	46,437 0 0
L. H. & R. Roberts	46,287 0 0
Holland & Hannen	45,828 0 0
Peto Bros.	45,337 0 0
E. Lawrence & Sons	45,180 0 0
Brass & Son*	44,787 0 0

* Accepted at 40,334*l.* 17*s.* after the omission of certain works.

HOLLOWAY.—For rebuilding the St. John's Institute, Upper Holloway, for the Rev. H. W. Deardeen. Messrs. Woodthorpe & Hammond, architects. Quantities supplied:—

Ashby & Horner	£2,930	0	0
Brass & Son	2,905	0	0
Higgs & Hill	2,824	0	0
L. H. & R. Roberts	2,654	0	0
Dove Bros.	2,635	0	0
Lawrence & Co.	2,525	0	0
J. Beale	2,400	0	0

KENSINGTON.—For the entire reconstruction of the underground drainage system, fittings, &c., and sundry repairs, No. 51, Earls Court-square, South Kensington, for Mr. David Martineau, under the superintendence of Messrs. Morley & Letts, surveyors, Earls Court-road:—

E. K. Wilson, Sussex-place (accepted)	£281	19	2

[The entire work to be finished in eighteen days.]

KENSINGTON.—For sundry repairs at No. 27, Longridge-road, Earl's Court, S.W. Messrs. Morley & Letts, surveyors, Earl's Court-road:—

Bradford, Richmond (accepted)	£140	0	0

KINTBURY (Berks).—For additions and alterations to the Mill House, Kintbury, Berks, for Sir Richard Sutton, Bart. Mr. James H. Money, Newbury, Berks, architect. Proprietor finds bricks, tiles, sand, and gravel. No quantities:—

H. Bronsdon, Kintbury	£554	19	0
Samuel Elliott, Newbury (accepted)	475	0	0

[J. S. Bance, Kintbury, too late.]

LEATHERHEAD (Surrey).—For erection of house, stables, &c., at Hawkshill, Fetcham, near Leatherhead, for Mr. E. Blake. Messrs. Whitfield & Thomas, architects, Cockspur-street. Quantities by Messrs. Evans & Deacon, Adelaide-street:—

Goddard & Sons	£4,340	0	0
Hill Bros.	4,268	0	0
Maides & Harper	4,085	0	0
Turtle & Appleton	3,945	0	0
Foster & Dicksee, Rugby	3,925	0	0
Bottrill, Reading	3,910	0	0

LEE.—For building a house and shop, situate at No. 8, High-road, Lee, for Mr. F. W. Warmington. Mr. Walter J. Ebbetts, architect, Strand. Quantities supplied by Mr. T. E. Mundy:—

W. Holt, Croydon	£795	0	0
H. Baylis, Highbury	760	0	0
G. F. Havell, Lee	760	0	0
J. Bowdidge, Greenwich	749	0	0
Dorrell & Co., London	747	0	0
T. Powell, Lee	730	0	0
D. R. Kennard, Lee	720	0	0
Chas. Robson, Lewisham	698	0	0
Steel Bros., Dalston (accepted)	660	0	0
H. Barber, Lewisham	630	0	0

LONDON.—For providing a jeweller's shop front and interior fittings, at 35, Gray's Inn-road, for Mr. G. Pockett, Messrs. Isaac & Florence, architects:—

F. Sage & Co.	£383	0	0
Drew & Cadman	380	0	0
Yardley & Sons (accepted)	325	0	0

LONDON.—For fitting up premises, 3, Marlborough Mansions, S.W., as a fancy stationer's, for Mr. Arthur Punt:—

Yardley & Sons (accepted)	£142	15	0

LONDON.—For fitting up a cigar divan, at 6, Marlborough Mansions, for Mr. Doughty. Messrs. Martin & Purchase, architects:—

Yardley & Sons (accepted)	£156	0	0

LONDON.—For fitting new buffet, and internal decorations, at St. Paul's Railway-station, for Messrs. Spiers & Pond, Limited:—

Yardley & Sons (accepted)	£1,073	0	0

LONDON.—For drainage and other works to No. 5, Greville-place, Kilburn Priory, for Mr. Frederick Sherry. Mr. Walter J. Ebbetts, architect, Strand:—

R. Y. Yerbury (accepted)	£190	0	0

LONDON.—For alterations and additions at No. 288, Brockley-road. Mr. J. B. Wall, architect, Walbrook:—

Kennard Bros.	£265	0	0
Chas. Goad	249	0	0
W. Smith	238	0	0
M. Redman, Brockley (accepted)	222	0	0

LONDON.—For works to houses, Britannia-street, City-road. Mr. J. B. Wall, architect, Walbrook:—

F. Head, Hackney (accepted)	£325	10	0

LYMINGTON.—For alterations and additions to the Angel Hotel, for Messrs. Eldridge, Pope, & Co. Messrs. Kemp-Welch & Pinder, architects:—

Davis & Lambert, Bournemouth	£620	0	0
Jenkins & Son, Bournemouth	518	0	0
Pardey & Leroy, Lymington	432	17	0
Rashley Bros., Lymington (accepted)	398	0	0

ORPINGTON (Kent).—For building residence at Orpington, Kent, for Mr. Wm. Vinson. Mr. G. St. Pierre Harris, architect, Basinghall-street. Quantities by Mr. C. Stanger, Finsbury-pavement:—

Durtnell	£3,384	0	0
F. Higgs	3,332	0	0
D. Payne	3,253	0	0
Taylor & Son	3,162	0	0
F. Wood	3,132	0	0
T. Knight	3,080	0	0
W. & F. Croaker	3,039	0	0
H. Somerford & Son	2,897	0	0

PARKSTONE-ON-SEA.—For making new roads on the Chaddesley Glen Estate, for Mr. G. J. Piercy. Messrs. Kemp-Welch & Pinder, architects and surveyors:—

	Roads.			Catchpots.		
E. Elliott	£510	0	0	£5	13	6
Saunders & White	216	0	0	4	0	0
Candy & Lock	210	10	0	2	5	0
G. Troke	145	0	0	2	11	6
S. White	132	0	0	3	7	6
W. Guy	127	0	0	2	10	0
R. Watton, Bournemouth, (accepted)	113	0	0	3	5	0

POKESDOWN.—For alterations to the White Horse Inn, Pokesdown, for Messrs. Eldridge, Pope, & Co. Messrs. Kemp-Welch & Pinder, architects:—

S. Taylor	£127	0	0
Davis & Lambert, Bournemouth *	122	10	0

* Accepted.

PORTHCAWL.—For building villa residence, coach-house, stable, &c., at Porthcawl, for Mr. P. James, M.D. Mr. D. L. Harris, C.E., architect and surveyor, Cardiff. Quantities by Mr. D. L. Harris:—

J. L. Rees, Taibach	£1,642	17	5
D. C. Jones & Co., Gloucester	1,589	0	0
Chas. James, Porthcawl	1,414	0	0
Evans Bros., Cardiff	1,186	0	0
John Davies, Aberavon (accepted)	1,156	0	0

READING.—For additions to Lower Redlands, Reading, for Mr. Herbert Sutton. Mr. G. W. Webb, architect, Friar-street, Reading:—

Higgs	£495	0	0
Margetts	412	0	0
Bottrill	380	0	0
Searle (accepted)	389	0	0

[All of Reading.]

RINGWOOD.—For alterations and additions to the Railway Hotel, for Messrs. Eldridge, Pope, & Co. Messrs. Kemp-Welch & Pinder, architects, Bournemouth:—

R. Tuck Ringwood	£133	15	0
Tuck & Carley, Ringwood (accepted)	132	0	0

SNARESBROOK (Essex).—For alterations and repairs to Addison Villa, for Mr. A. N. Colson. Messrs. Hills & Fletcher, architects:—

Alexander, Bow	£320	0	0
Martin, Forest Gate	297	0	0
J. & F. Bane, Leytonstone	278	0	0
Deacon, Limehouse (accepted)	275	0	0

SUTTON (Surrey).—For alterations to house, Cheam-road, for Mr. C. Panton. Mr. J. B. Wall, architect, Walbrook:—

T. D. Leng	£324	0	0
M. Redman	290	0	0
W. Hickinbotham, Teddington	213	13	0

SWAY.—For new chancel to the Church of St. Luke, Sway, near Lymington. Messrs. Kemp-Welch & Pinder, architects, Bournemouth:—

W. Hoare, Bournemouth	£791	0	0
F. Reeks, Lymington	725	0	0
W. Franklin, Southampton	690	0	0
McWilliam & Son, Bournemouth	688	0	0
Jenkins & Son, Bournemouth	648	0	0

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